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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Albuquerque Field Office
435 Montaño Road NE
Albuquerque, New Mexico 87107-4935

IN REPLY REFER TO:
1610 (01

June 1999

Dear Reader:

Enclosed for your review and comment is the Draft Rio Puerco Resource Management Plan Amendment/Environmental Impact Statement (EIS) for the El Malpais National Conservation Area (NCA), Chain of Craters Wilderness Study Area, and contiguous lands. The plan provides alternatives for managing the natural resources and uses in the NCA, addresses amendments to the Rio Puerco Resource Management Plan, and assesses the suitability of the Chain of Craters area for wilderness designation. Your careful review and comments are needed at this time to ensure that your concerns have been considered in the planning process. (Please note: This hard copy is your review copy. Please retain this document; the Proposed Plan Amendment/Final EIS may be printed in short form, so this draft may be referenced.)

Please direct your comments to the El Malpais Plan Team Leader at the above address. Written comments must be postmarked no later than September 24, 1999. Also use this address when requesting further information on materials referenced in the Draft Plan.

Comments on the alternatives and the adequacy of the impact analysis are most useful when they address one or more of the following:

- Errors in the analysis,
- New information that would have a bearing on the analysis,
- Misinformation that could affect the outcome of the analysis,
- Requests for clarification,
- A substantive new alternative whose mix of allocations differ from any of the existing alternatives.

Where possible, refer to the pages and paragraphs on which you are commenting.

Formal verbal comments will be received at the following public hearings, which will begin at 7:00 p.m. and continue until those signed up to speak have had an opportunity to do so.

- Monday, July 26, Grants High School, 500 Mountain Road, Grants, NM
- Tuesday, July 27, Quemado High School, Highway 60, Quemado, NM
- Wednesday, July 28, Del Norte High School, 5323 Montgomery NE, Albuquerque, NM

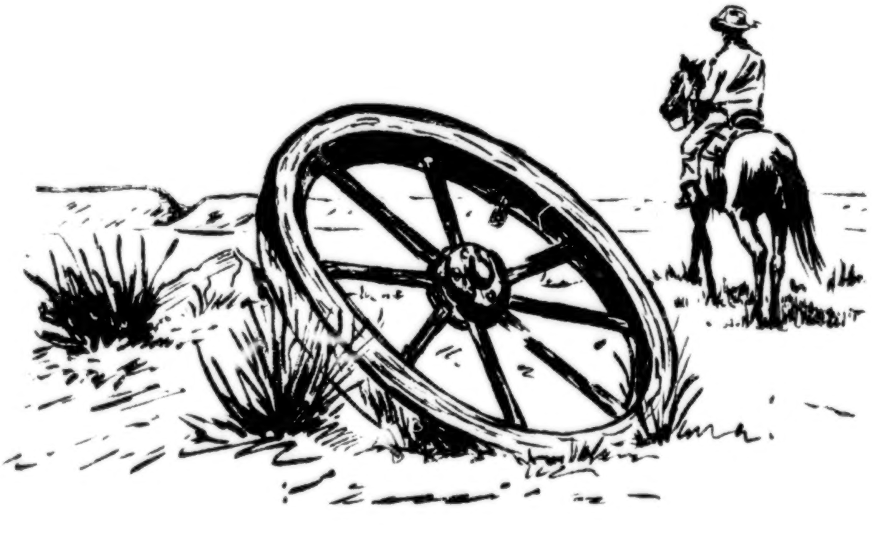
A 5-minute time limit will be placed on all verbal comments, which should be accompanied by a written summary of the presentation. Verbal and written comments will be fully considered and evaluated during preparation of the Proposed Plan Amendment/Final EIS.

Sincerely,

Edwin J. Singleton

Edwin J. Singleton
Manager, Albuquerque Field Office

Rio Puerco Resource Management Plan Amendment/
Environmental Impact Statement
for
El Malpais National Conservation Area
and
Chain of Craters Wilderness Study Area



United States Department of the Interior
Bureau of Land Management
Albuquerque Field Office

Rio Puerco Resource Management Plan Amendment and Environmental Impact Statement for El Malpais National Conservation Area and Chain of Craters Wilderness Study Area

Draft (X) Final ( )

United States Department of the Interior, Bureau of Land Management

1. Type of Action: Administrative (X) Legislative (X)

2. This Draft Resource Management Plan (RMP) Amendment and Environmental Impact Statement (EIS) describes and analyzes four alternatives for managing the public land and resources of the El Malpais National Conservation Area, Albuquerque Field Office, New Mexico, and contiguous lands. The alternatives are: (A) Existing Management (No Action) Alternative, (B) Resource Use Alternative, (C) Natural Processes Alternative, and (D) Balanced Management (Preferred) Alternative.

3. Comments have been requested from the individuals, groups and agencies shown on the distribution list in Chapter 5.

4. For further information, contact:

   Kent Hamilton
   Planning & Environmental Coordinator
   Bureau of Land Management
   435 Montaño Road NE
   Albuquerque, New Mexico 87107-4935

5. Date Draft Filed with Environmental Protection Agency:

6. Comments on the Draft must be postmarked no later than: September 24, 1999

RECOMMENDED:

Edwin J. Singleton

Edwin J. Singleton
Manager, Albuquerque Field Office

APPROVED:

Michelle J. Chávez
State Director, New Mexico

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TABLE A

SUMMARY TABLE

Issue/Action Item	Alternative A (Existing Management)	Alternative B (Resource Use)	Alternative C (Natural Processes)	Alternative D (Balanced Management)
Recreation Overall Emphasis	Providing dispersed recreational opportunities & maintaining existing developed recreational facilities	Providing increased facility development to support recreational use & protect resources	Providing dispersed recreational opportunities using few facilities; some existing facilities removed	Providing combination of developed & dispersed recreational opportunities
Recreational Opportunity Spectrum Classes (acres/% of Planning Area)	Roaded Natural --79,200/28 Semi-Primitive Motorized --85,000/30 Semi-Primitive Nonmotorized --122,100/42	Roaded Natural --79,200/28 Semi-Primitive Motorized --82,200/29 Semi-Primitive Nonmotorized --124,900/43	Roaded Natural --72,700/25 Semi-Primitive Motorized --56,900/20 Semi-Primitive Nonmotorized --156,700/55	Roaded Natural --79,000/28 Semi-Primitive Motorized --72,000/25 Semi-Primitive Nonmotorized --135,300/47
Dispersed Camping & Picnicking	Allowed throughout the Planning Area; The Narrows recreation site providing limited facilities	Allowed throughout the Planning Area; additional facilities developed	Allowed throughout the Planning Area; no additional facilities provided. Related facilities @ The Narrows removed.	Allowed throughout the Planning Area; additional facilities developed
Visitation @ Cultural/Historical Sites	Opportunity @ 9 sites through guided/interpretive services	Opportunity @ 14 sites through guided/interpretive services	No formal opportunity provided; available as dispersed activity	Opportunity @ 12 sites through guided/interpretive services
Back Country Byways	One designated byway would continue to be available.	Five byways would be designated (1 existing, 4 new).	No designation; existing byway decommissioned.	Three byways would be designated (1 existing, 2 new).
Assignment of Visual Resource Management (VRM) Classes	Visual resources on 22,000 acres unclassified & managed on case-by-case basis	Would amend RMP to modify current VRM objectives & classify unclassified lands	Same as Alternative B	Same as Alternative B

TABLE A (cont'd)

Issue/Action Item	Alternative A (Existing Management)	Alternative B (Resource Use)	Alternative C (Natural Processes)	Alternative D (Balanced Management)
Recreation, concl'd VRM Classes (acres)	Class I--125,130 Class II--86,760 Class III--14,110	Class I--104,450 Class II--129,440 Class III--14,110	Class I--128,440 Class II--119,500 Class III--60	Class I--104,730 Class II--143,210 Class III-60
Facility Development Camping Facilities	Four single-family units @ existing Narrows recreation site available	40 single-family units & 1 multi-family/group unit developed @ new campground in Spur Unit; Narrows recreation site rehabilitated & converted for picnic & trailhead use	No units developed	20 single-family units & 1 multi-family/group unit developed @ new campground in Spur Unit; Narrows recreation site rehabilitated & converted for picnic & trail-head use
Picnic Facilities	Provided @ 1 existing site (The Narrows)	Provided @ 3 sites (The Narrows, La Ventana Natural Arch, Cerro Americano CDNST trailhead)	Not provided	Provided @ 1 site (The Narrows)
Hiking Trails	Total of 36.5 miles of trail, 5 existing trails & 5 trailheads	Total of 77 miles of trail, 25 trails (5 existing, 20 new) & 16 trailheads	Total of 33 miles of trail, 4 trails (existing) & 2 trailheads. Narrows Rim Trail not available.	Total of 57 miles of trail, 15 trails (5 existing, 10 new) & 11 trailheads
Access & Transportation Access by Nonmotorized, Nonmechanized Means	100,800 acres available	104,450 acres available	128,440 acres available	104,730 acres available
Cross-Country Vehicle Travel	12,000 acres available	No acres available	Same as Alternative B	Same as Alternative B
Off-Highway Vehicle Access	135,200 acres available for access on existing routes	143,550 acres available for access on designated routes	119,560 acres available for access on designated routes	143,270 acres available for access on designated routes
Open Vehicle Routes	354.5 miles existing	337.5 miles designated	199.7 miles designated	273.1 miles designated

2

TABLE A (cont'd)

Issue/Action Item	Alternative A (Existing Management)	Alternative B (Resource Use)	Alternative C (Natural Processes)	Alternative D (Balanced Management)
Wilderness Management & Suitability Designated Acres (public land)	100,800 acres	104,450 acres (including those recommended)	128,440 acres (including those recommended)	104,730 acres (including those recommended)
Suitability Recommendations [reviewed Chain of Craters WSA (18,300 acres) & land contiguous to Cebolla Wilderness (10,380 acres) for suitability as wilderness]	No acres recommended to Congress as suitable	3,650 acres recommended to Congress as suitable, through expansion of Cebolla Wilderness	27,640 acres recommended to Congress as suitable, through inclusion of entire Chain of Craters & expansion of Cebolla Wilderness	3,930 acres recommended to Congress as suitable, through expansion of Cebolla Wilderness
Interim Management/ Release from Wilderness Review	18,300 acres managed under Interim Management Policy for Lands Under Wilderness Review (IMP--BLM Manual H-8550-1, 1995)	21,950 acres managed under IMP; 6,730 acres released	27,640 acres managed under IMP; 1,040 acres released	22,230 acres managed under IMP; 6,450 acres released
Amending Cebolla Wilderness Boundary	No recommendation to Congress	Recommendation to Congress to include additional 3,650 acres of public land, & exclude 160 acres of Acoma Pueblo land	Recommendation to Congress to include additional 9,340 acres of public land, & exclude 160 acres of Acoma Pueblo land	Recommendation to Congress to include additional 3,930 acres of public land, & exclude 160 acres of Acoma Pueblo land
Cultural Resources Use Allocation	Emphasize conservation for future use	Emphasize management for public & scientific use	Emphasize sociocultural use	Emphasize conservation for future use
National Historic Preservation Act Compliance	Standard procedures	Standard procedures w/expanded consideration of secondary impacts	Strong preference for avoidance of any disturbance or impact to sites eligible for National Register	Expanded consideration of secondary impacts & emphasis on avoidance of impacts

TABLE A (cont'd)

Issue/Action Item	Alternative A (Existing Management)	Alternative B (Resource Use)	Alternative C (Natural Processes)	Alternative D (Balanced Management)
Cultural Resources, cont'd Inventory & Baseline Condition	6,553 acres of new Class III inventory (2½% of Planning Area)	13,105 acres of new Class III inventory (5% of Planning Area)	No special inventories to identify resources & define baseline condition	6,553 acres of new Class III inventory (2½% of Planning Area), plus thematic reconnaissance
Scientific Investigations--General	Standard procedures; 3-5 projects over next 20 years	Scientific use encouraged; 5-8 projects over next 20 years	Generally no investigations causing physical alteration of sites; no projects over next 20 years	Discourage investigations causing physical alteration of sites; no such projects over next 20 years
--Wilderness	Extractive activities allowed if no significant short- or long-term impacts to other resources.	Extractive activities allowed if no long-term impacts to other resources.	No extractive activities, short- or long-term impacts to other resources allowed.	Extractive activities allowed if no significant short- or long-term impacts to other resources.
Pottery Collection	No special provisions	"Traditional use" collection allowed under special-use permit	No special provisions	"Traditional use" collection allowed under special-use permit
Signs	Small, inconspicuous antiquities signs @ ≤100 sites	Inconspicuous signs @ ≤200 sites	No antiquities signs	Small, inconspicuous antiquities signs @ ≤100 sites
Access Easements & Consolidation of Ownership	Seek easements & consolidation for specific cultural resources.	Seek easements & consolidation for areas containing major archeological & historical values.	Seek easements only when needed for law enforcement; no consolidation.	Seek easements & consolidation for areas containing major archeological & historical values.
Cadastral Survey	Cebolla Canyon Schoolhouse	Cebolla Canyon Schoolhouse	None	Cebolla Canyon Schoolhouse
Road Closure	Close Cebolla Canyon Community road; other closures possible.	Vehicle access least restrictive. No special closures for cultural resources.	Vehicle access most restrictive. No special closures for cultural resources.	Close Cebolla Canyon Community road; other closures possible.

TABLE A (cont'd)

Issue/Action Item	**Alternative A (Existing Management)**	**Alternative B (Resource Use)**	**Alternative C (Natural Processes)**	**Alternative D (Balanced Management)**
Cultural Resources, cont'd Formal Monitoring	Dittert Site, Oak Tree Ruin, Arroyo Ruin; other sites possibly added in future	Dittert Site, Oak Tree Ruin, Arroyo Ruin, Pinole Site, The Citadel, Armijo Canyon Homestead, Lobo Canyon Petroglyphs, Aldridge Petroglyphs; other sites possibly added in future	No formal monitoring, other than Law Enforcement Ranger patrols	Dittert Site, Oak Tree Ruin, Arroyo Ruin; other sites possibly added in future
Stabilization--General	Maintain projects @ Dittert Site, Oak Tree Ruin, Arroyo Ruin, Armijo Canyon Homestead, & Armijo Canyon Springhouse. Implement minor repairs & major stabilization @ 10 other homesteads, & erosion control @ 12 other locations.	Maintain projects @ Dittert Site, Oak Tree Ruin, Arroyo Ruin, Armijo Canyon Homestead, & Armijo Canyon Springhouse. Implement new projects @ Stone House, Cebolla Canyon Schoolhouse, & >10 other homesteads. Take erosion control measures @ 25 additional sites.	Take remedial actions only if extraordinary scientific values were threatened. Otherwise, implement no new projects nor maintenance of existing projects.	Maintain projects @ Dittert Site, Oak Tree Ruin, Arroyo Ruin, Armijo Canyon Homestead, & Armijo Canyon Springhouse. Implement new projects only if highly valuable resources were endangered.
--Wilderness	Stabilization & erosion control allowed if no other methods existed.	Stabilization & erosion control allowed if no other methods existed.	No stabilization or erosion-control projects allowed.	Stabilization & erosion control allowed if no other methods existed.
Fire Suppression	Between 8 & 12 best-preserved homesteads identified as high-priority fire- suppression zones.	All structures w/standing wooden elements singled out as high-priority fire- suppression zones, including in wilderness.	No special high-priority fire-suppression zones.	Eight well-preserved homesteads identified as high-priority fire-suppression zones; others could be added.

TABLE A (cont'd)

Issue/Action Item	**Alternative A (Existing Management)**	**Alternative B (Resource Use)**	**Alternative C (Natural Processes)**	**Alternative D (Balanced Management)**
Cultural Resources, concl'd Special Designations	No special emphasis on National Register nominations, but 4-5 likely, plus 1 nomination to World Heritage List	High priority on expansion of existing National Register Districts and new nominations. Actively encourage World Heritage Listing of Dittert Site.	No special designations	No special emphasis on National Register nominations, but 4-5 likely, plus 1 nomination to World Heritage List
Boundary Modifications	No additions or boundary modifications to NCA	Recommend addition of adjacent AFO lands w/high density of cultural resources to NCA	Recommend addition of adjacent AFO & SFO lands w/high density of cultural resources to NCA	Recommend addition of adjacent AFO & SFO lands w/high density of cultural resources to NCA
Public Interpretation	Limited	Emphasize onsite & offsite interpretation	No onsite interpretation; offsite interpretation would not encourage visitation.	Onsite interpretation @ limited number of sites. Discourage visitation to some other sites. Develop offsite interpretation.
Long-Term Impacts, Summary of Alternatives	Continue as @ present. Cultural resources managed essentially like other cultural resources on Albuquerque Field Office lands.	Would emphasize scientific & interpretive use of cultural resources, while maximizing active protection of those values.	Maximum sensitivity to American Indian values, & prevention of human impacts, including those resulting from scientific & interpretive use. Would allow degradation through natural processes.	Increased emphasis on active management of cultural resources, relative to other areas in AFO. Would emphasize long-term preservation of scientific values, while discouraging scientific use. Limited provisions for interpretive use.

TABLE A (cont'd)

Issue/Action Item	Alternative A (Existing Management)	Alternative B (Resource Use)	Alternative C (Natural Processes)	Alternative D (Balanced Management)
Wildlife Habitat Vegetative Enhancement (Prescribed Fires/Woodland Thinning) (Short-term impacts occurring annually to help improve wildlife habitat)	1,500 acres--includes 1 prescribed fire & 1 wildland fire under prescription. No woodland thinning projects.	4,100 acres--includes 4 prescribed fires & 1 wildland fire under prescription, 1 woodland thinning project (100 acres)	1,000 acres--includes no prescribed fires & 1 wildland fire under prescription. No woodland thinning projects.	3,100 acres--includes 4 prescribed fires & 1 wildland fire under prescription, 1 woodland thinning project (100 acres)
Wildlife Developments [Long-term impacts lasting the life of the plan (15-20 years)]	20 acres; no riparian fencing	60 acres; 1.5 miles of riparian fencing	3 acres; no riparian fencing	40 acres; 1.5 miles of riparian fencing
Prairie Dog Enhancement Project	None	1,000 acres	None	1,000 acres
Impacts of Recreation Activities on Wildlife [Long-term impacts created by human activities that would last the life of the plan (15-20 years)]	6,480 acres (refer to Chapter 2 for activities)	14,080 acres (refer to Chapter 2 for activities)	5,200 acres (refer to Chapter 2 for activities)	9,820 acres (refer to Chapter 2 for activities)
Vegetation Coordinated Resource or Allotment Management Plans (CRMP/AMPs)	Continue to develop new plans, & periodically review/revise existing plans.	Same as Alternative A	Same as Alternative A	Same as Alternative A
Minimum Rest Period included in CRMP/AMPs	May 15-September 15 for @ least one pasture/ allotment	Same as Alternative A	All year for at least one pasture/allotment	April 15-October 15 for @ least one pasture/allotment

TABLE A (cont'd)

Issue/Action Item	Alternative A (Existing Management)	Alternative B (Resource Use)	Alternative C (Natural Processes)	Alternative D (Balanced Management)
Vegetation, concl'd Range Improvement Projects	Considered with or without CRMP/AMPs	Same as Alternative A	No new projects developed	New projects could be developed if needed to provide rest from grazing.
Erosion Control Structures	Small structures to control/divert water would be considered.	In addition to small structures, large structures to impound water would be considered.	No structures completed.	Same as Alternative A
Noxious Weeds	Treated by mechanical, chemical or biological means	Same as Alternative A	Treated by mechanical or biological means	Same as Alternative A
Woodland & Forest Management	No tree removal permitted.	Up to 100 acres of woodland thinned/year to meet vegetative objectives.	No tree removal permitted.	Up to 150 acres of woodland thinned/year to meet vegetative objectives.
Riparian Vegetation Management	Springs used by livestock would be fenced, but developed for continued use by livestock and wildlife. No riparian vegetation planting completed.	Same as Alternative A. In addition, riparian areas would either be scheduled for regular rest from livestock grazing or fenced to exclude livestock use.	No new fences constructed. Wet areas around springs scheduled for regular rest from livestock grazing.	Same as Alternative B. In addition, riparian planting could be completed.
Exotic Species Invading Riparian Areas	No control or removal treatments performed.	Same as Alternative A	Same as Alternative A	Removed by mechanical, chemical, or biological means

TABLE A (concl'd)

Issue/Action Item	**Alternative A (Existing Management)**	**Alternative B (Resource Use)**	**Alternative C (Natural Processes)**	**Alternative D (Balanced Management)**
Boundary & Land Ownership Adjustments				
Current NCA Acreage	262,100	262,100	262,100	262,100
Changes Recommended to Congress				
--Additions	0	26,200	41,300	41,300
--Reductions (Acoma)	0	(960)	(960)	(960)
Modified NCA Acreage	262,100	287,340	302,440	302,440
Planning Area Acreage				
--Outside NCA	24,200	0	0	0
--Managed Under Rio Puerco RMP	2,000	0	0	0
Outside Planning Area (Recommended NCA) Managed Under Socorro RMP	15,100	15,100	0	0
Wilderness in NCA (acres)				
--Cebolla	62,000*	65,490	71,180	65,930
--West Malpais	39,800	39,800	39,800	39,800
--Chain of Craters WSA	0 (unsuitable)	0 (unsuitable)	18,300 (suitable)	0 (unsuitable)
Total	101,800	105,290	129,280	105,730
Public Land Outside NCA, Open to Public Land & Mineral Laws (acres)	22,000	0	0	0

Note: * Rounded.

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CHAPTER 1

PURPOSE AND NEED

INTRODUCTION

This document is the *Rio Puerco Resource Management Plan Amendment/Environmental Impact Statement for El Malpais National Conservation Area and Chain of Craters Wilderness Study Area*. The purpose of the document (referred to as "the El Malpais Plan" or "the plan") is land use planning for the public lands and resources of the El Malpais National Conservation Area (NCA) and certain adjacent lands (refer to Map 1). As required by Public Law (P.L.) 100-225, the enabling act for the NCA, this plan also amends the *Rio Puerco Resource Management Plan* (RMP--USDI, BLM 1986).

The plan provides a comprehensive framework for managing and allocating resources for the NCA and contiguous lands for the next 20 years. It includes four alternatives and a Draft Environmental Impact Statement (EIS) that fulfill requirements of P.L. 100-225, the Federal Land Policy and Management Act (FLPMA), and the National Environmental Policy Act (NEPA). In accordance with P.L. 100-225, this document also contains analysis and a recommendation on the suitability of the Chain of Craters Wilderness Study Area (WSA) for inclusion into the National Wilderness Preservation System.

Before Congressional designation of the NCA, management of the area was guided by the RMP. This plan amends some of the RMP decisions related to the NCA. As the NCA is a small part of the lands managed by the Albuquerque Field Office (formerly the Rio Puerco Resource Area), the majority of RMP decisions will not be affected by this amendment. Since enactment of P.L. 100-225, the BLM has acquired 13,400 acres in the NCA and 14,000 acres of land contiguous to it. Some of the acquired lands were not addressed in the RMP. As these lands contain resource values complimentary to those of the NCA, they are included in this plan.

This plan also considers recommendations to the Congress that the NCA boundaries be adjusted to remove certain contiguous lands and add others. The lands proposed for removal belong to the Acoma Tribe and total 960 acres. The contiguous lands for addition consist of 26,200 acres of public land in Cibola County that are managed by the Albuquerque Field Office, and 15,100 acres of public land in Catron and Socorro Counties managed by the Socorro Field Office. Regardless of this plan's recommendations, Congressional action will be needed to change the NCA boundary.

[Note: Except for the proposed recommendation to amend the NCA boundary, no other management decisions in this plan will apply to the Socorro Field Office federal lands. The *Socorro Resource Management Plan* (USDI, BLM 1989c) will continue to guide management of these lands pending Congressional action.]

BACKGROUND

The NCA was established by P.L. 100-225 on December 31, 1987. Congressional designation of the area as an NCA requires the BLM to manage the area's resources with a higher order of protection than that followed on other multiple use lands.

To ensure protection of the NCA's resources, P.L. 100-225 required the agency to prepare a General Management Plan (GMP) for the NCA. Between 1988 and 1991, the BLM developed a GMP and Environmental Assessment (EA) for NCA. The GMP/EA was appealed to the Interior Board of Land Appeals (IBLA) on the grounds that an RMP Amendment and EIS should have been prepared.

In 1994, the IBLA decided in favor of the appellants, directing the BLM to prepare an RMP and EIS for the NCA. This document is being prepared to meet the GMP requirements of P.L. 100-225 and the IBLA decision.

LOCATION OF THE PLANNING AREA

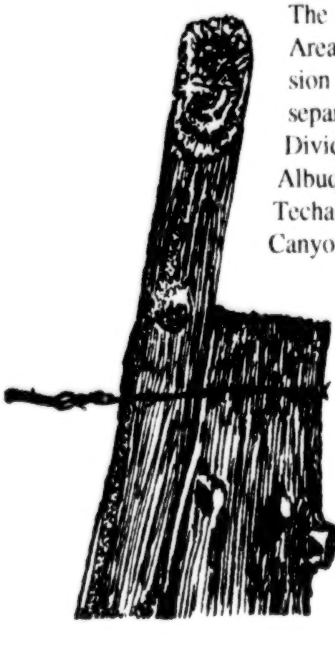
The Planning Area, including the NCA and contiguous lands, lies south of the city of Grants, New Mexico in Cibola County. This area is referred to as "the Planning Area"; the smaller area designated in P.L. 100-225 is referred to as "the NCA." The Planning Area encompasses 248,000 acres of federal and 36,500 acres of private land. It is bordered on the east by the Acoma Indian Reservation, on the south by

Catron and Socorro Counties, on the west by Ramah Navajo land, and on the north by the Zuni Mountain portion of the Cibola National Forest (refer to Map 2). The northern section of the Planning Area nearly surrounds the El Malpais National Monument, administered by the National Park Service (NPS).

ADMINISTRATIVE UNITS WITHIN & ADJACENT TO THE PLANNING AREA

The NCA is the primary area for which this plan is being prepared. It contains three administrative units with additional special designations, the Cebolla Wilderness, the West Malpais Wilderness and the Chain of Craters Wilderness Study Area (WSA--refer to Map 2). For geographic and descriptive purposes, the remainder of the NCA has been divided into seven other administrative units, the Brazo, Breaks, Cerritos de Jaspe, Cerro Brillante, Continental Divide, Neck, and Spur (refer to Map 3, and to Table 1-1 for acreage).

The Planning Area also includes lands acquired by the BLM since 1987 that are within or adjacent to the NCA, and lands or easements needed to develop the Continental Divide National Scenic Trail (CDNST). Five areas adjoining the NCA are being considered for inclusion into it. The lands outside the NCA but within the Planning Area boundary have been divided into two separate units, the Brazo Non-NCA and the Breaks Non-NCA (refer to Map 3). The lands outside the Planning Area being considered for inclusion into the NCA consist of three separate units, the Continental Divide-AFO (managed by the Albuquerque Field Office), the Techado Mesa-SFO and the Tank Canyon-SFO (both managed by the Socorro Field Office). Across a sixth unit, the Cerro Brillante-AFO (also managed by the Albuquerque Field Office), the BLM would seek an easement for the CDNST. A description of all sixteen units follows.



[Note: Congressional action would be required before any of these adjoining units could become part of the NCA. If the Congress included them within the NCA, additional BLM planning would be needed (including amendments to the existing RMPs).]

[If Congressional action resulted in lands in Socorro and Catron Counties being added to the NCA, management would be under the existing Socorro RMP pending completion of an RMP amendment. The amendment would specifically address management of the resources and uses in the SFO units, including (among others) cultural resources, rights-of-way, minerals, visual resources, recreation and off-road vehicle travel. Some of these resources and uses are described briefly in Appendix R.]

NCA Units

Cebolla Wilderness

This wilderness is located along east side of New Mexico (NM) 117 from The Narrows to County Road 41 (to Pie Town). The area encompasses approximately 62,000 acres, of which 99 percent is under BLM administration.

Mesas, canyons, buttes, and wide grassy valleys characterize the area. Sandstone forms a cliff face along the east side of the unit at the base of Cebollita Mesa. The sides of the mesa are covered by recent landslide deposits, while the top is capped by lava flows approximately 2.5 million years old. La Ventana Natural Arch, one of the largest in New Mexico, is located approximately 8 miles south of the BLM Ranger Station in this wilderness.

West Malpais Wilderness

This wilderness is located north and east of County Road (CR) 42 and southwest of the El Malpais National Monument. Vehicular access along the west side of the area is dependent on the condition of CR 42, which can become impassable in wet weather. The wilderness encompasses approximately 39,800 acres, of which 99 percent is under BLM administration.

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TABLE 1-1

ACREAGE FOR THE EL MALPAIS NATIONAL CONSERVATION AREA (NCA), PLANNING AREA, AND AREAS UNDER CONSIDERATION FOR ADDITION TO THE NCA

(rounded to nearest 100 acres)

Unit	BLM	Private	Indian	Total
Within NCA Cebolla Wilderness	61,500	300	200	62,000
West Malpais Wilderness	39,300	500	0	39,800
Chain of Craters Wilderness Study Area	18,300	0	0	18,300
Brazo	28,700	900	0	29,600
Breaks	6,500	0 [a]	0	6,500
Cerritos de Jaspe	9,200	3,500	0	12,700
Cerro Brillante	34,400	1,700	0	36,100
Continental Divide	17,500	6,800	0	24,300
Neck	6,100	20,300	800	27,200
Spur	4,500	300	800	5,600
Subtotal NCA	226,000	34,300(+) [a]	1,800	262,100
Within Planning Area/Outside NCA Brazo Non-NCA (Cibola County)	10,400	1,700	0	12,100
Breaks Non-NCA (Cibola County)	11,600	500	0	12,100
Subtotal Non-NCA	22,000	2,200	0	24,200
Total Planning Area	248,000	36,500	1,800	286,300
Outside Planning Area & NCA Cerro Brillante-AFO (Cibola County) [b]	0	2,000	0	2,000
Continental Divide-AFO (Cibola County)	2,000	0	0	2,000
Tank Canyon-SFO (Catron County) [c]	9,900	200	0	10,100
Techado Mesa-SFO (Catron, Socorro Counties)	5,000	0 [d]	0	5,000
Subtotal	16,900	2,200(+) [d]	0	19,100
Grand Total	264,900	38,700	1,800	305,400

Notes: [a] The Breaks Unit contains 22 acres of private land.

[b] AFO is the Albuquerque Field Office (formerly the Rio Puerco Resource Area of the Albuquerque District). The BLM would seek an easement for the CDNST across this unit, but would not include it within NCA boundaries unless owners were willing to sell or make an exchange.

[c] SFO is the Socorro Field Office (formerly the Socorro Resource Area of the Las Cruces District).

[d] The Techado Mesa-SFO Unit contains 40 acres of private land.

Within the wilderness, volcanic landscapes dominate. Lava flows 800,000 years old and portions of younger flows from the National Monument are found in and surrounding the area.

Chain of Craters
Wilderness Study Area (WSA)

This unit is located along the western edge of the Planning Area between CR 42 and Ramah Navajo Indian land. It encompasses approximately 18,300 acres, all of which are under BLM administration. The Continental Divide crosses the western portion of the Planning Area in the WSA.

Within the WSA, volcanic landscapes predominate. A series of cinder cones is scattered through this area and to the north, rising above a floor of 800,000-year-old lava flows. The older flows are covered with grass, low shrubs, piñon and juniper trees. The highest point is Cerro Lobo, at an elevation of 8,345 feet.

Brazo Unit

The Brazo Unit is located in the extreme southeastern corner of the Planning Area, east of the Cebolla Wilderness and south of the Acoma Indian Reservation. This unit provides access to the wilderness from the east-southeast, and encompasses approximately 29,600 acres, of which 97 percent is under BLM administration.

Sandstone mesas, canyons, buttes and wide grassy valleys characterize the unit. The area is predominantly piñon-juniper woodlands with scattered sections of ponderosa pine forest. Access is by dirt roads that may be impassable during wet weather.

Breaks Unit

The Breaks Unit is located in the southeastern portion of the Planning Area just east of NM 117, and is surrounded by the Cebolla Wilderness. The unit encompasses approximately 6,500 acres, nearly all of which are under BLM administration (22 acres are private land).

Mesas, canyons, buttes, and wide grassy valleys make up the unit. The dominant vegetation is shrub-grassland with intermingled piñon-juniper woodland.

Cerritos de Jaspe Unit

The Cerritos de Jaspe Unit, located in the north-central portion of the Planning Area, is surrounded by the National Monument (except for about 3 miles along NM 53). Approximately 12,700 acres make up the unit, with about 72 percent under BLM administration.

Volcanic landscapes dominate the interior of this unit, while ancient lava flows and portions of younger flows in the National Monument surround it. This volcanic topography is combined with sandstone and limestone ridges, resulting in a diversity of natural features. The ridges are the south end of the Zuni Mountains; they support a complex of Douglas fir and ponderosa pine woodland found here at elevations lower than would be expected.

Cerro Brillante Unit

The Cerro Brillante Unit extends from the southwestern corner of the Planning Area along the southern boundary and to NM 117. The northern boundary is CR 42, which also forms the southern and western boundary of the West Malpais Wilderness. Approximately 36,100 acres lie within the unit, with 95 percent under BLM administration.

The landscape of this unit is dominated by rolling hills and swales covered with shrub-grasslands and small clumps of piñon-juniper woodlands. Cerro Brillante, a cinder cone reaching an elevation of approximately 8,050 feet, gives the unit its name. La Rendija, a large crack in the old basalt flows, bisects the unit from north to south along the corridor for the CDNST.

Continental Divide Unit

This unit is located in the northwestern portion of the Planning Area, bordered on the east by the National Monument. The unit encompasses approximately 24,300 acres, about 72 percent of which is under BLM administration. A series of aligned, steep-sided volcanic cinder cones and craters passes through this unit and the Chain of Craters WSA to the southwest.

Neck Unit

The Neck Unit is bounded on the north by Interstate 40 (I-40) and along the west by NM 53 and the community of San Rafael. The eastern edge of the unit runs along NM 117, with the National Monument as its southern boundary. The unit encompasses approximately 27,200 acres, with 22 percent under BLM administration.

This unit is a basalt-floored valley between the Zuni Mountains on the west and Las Ventanas Ridge on the east. It is truncated on the north by the Rio San Jose and Horace Mesa (southwest of Mount Taylor). Vegetation is mostly woody shrubs and grasses striving to exist on the older lava flows.

Spur Unit

The Spur Unit is located on the eastern edge of the Planning Area, just east of NM 117 and south of the Neck Unit. The BLM Ranger Station is located within this unit, which encompasses approximately 5,600 acres (with 80 percent under BLM administration).

The unit consists of sandy-bottomed valleys with rocky mesa topography along NM 117. Piñon-juniper woodlands dominate the vegetation.

Units Within the Planning Area but Outside the NCA

Brazo Non-NCA Unit

Located south of the Brazo Unit, this unit contains approximately 12,100 acres, of which 86 percent is under BLM administration. These lands have similar topography and resource values to those of the adjacent Brazo Unit.

Breaks Non-NCA Unit

The Breaks Non-NCA Unit is located just west and south of the Cebolla Wilderness, generally along CR 41. It encompasses approximately 12,100 acres, of which 96 percent is under BLM administration. (Over 70 percent of this total BLM acreage was acquired as part of recent land exchanges.)

Open grasslands characterize the unit. Vegetation consists of grasses and shrubs, including blue grama and fringed sage. Part of the unit is classified as having the "sparse to bare" vegetation type, which is extremely sensitive to climatic variation and surface disturbance.

Units Outside the Planning Area & NCA

Cerro Brillante-AFO Unit (Albuquerque Field Office)

This unit is located on the southern edge of the Cerro Brillante Unit, and is comprised of three sections of land outside the current NCA boundary south to NM 117. Similar to the Cerro Brillante Unit, this unit is dominated by rolling hills of old lava with open shrub-grassland vegetation. Approximately 3 miles of the route selected for the location of the CDNST treadway lie within the unit (on 2,000 acres of privately owned land). No BLM-administered land exists within this unit, and the agency would seek only an easement here unless owners were willing to sell or make an exchange.

Continental Divide-AFO Unit (Albuquerque Field Office)

This unit is located along the northwestern edge of the Continental Divide Unit, bordered on the south and east by the NCA boundary and on the north and west by private lands. It encompasses approximately 2,000 acres, all of which are under BLM administration. The topography of the unit is similar to that of the adjacent Continental Divide Unit.

Tank Canyon-SFO Unit (Socorro Field Office)

This unit adjoins the southwestern edge of the Planning Area and contains approximately 10,100 acres. Most of the unit is contained in a scenic area of rolling topography, with dominant piñon and juniper vegetation.

Techado Mesa-SFO Unit (Socorro Field Office)

The Techado Mesa-SFO Unit adjoins the southeastern edge of the Planning Area, and contains approximately 5,000 acres of public land and 40 acres of private land. This area has rolling topography and a high, steep-sided mesa capped by lava flows. Vegetation is dominated by piñon-juniper woodland and ponderosa pine forest with some oak/deciduous understory. Small playa lakes form seasonally on the mesa top.

MANAGEMENT OF THE NCA SINCE ITS ESTABLISHMENT

The El Malpais NCA enabling act, Public Law 100-225, contains specific directives for the BLM (refer to Appendix A for legislative highlights). Since the signing of the act on December 31, 1987, the BLM (along with other agencies and groups) has completed key actions in the NCA that are listed in Appendix B.

THE PLANNING PROCESS

The BLM develops three types of plans, RMPs (and RMP Amendments), Activity Plans and Project Plans. An RMP is a general land use plan as prescribed by FLPMA. An RMP Amendment is a modification of a portion of an original RMP. An RMP or RMP Amendment is always accompanied by an EA or EIS.

An Activity Plan is a more detailed and specific plan for managing a single resource program or special management unit. Examples include a cultural resource management plan, a wildlife habitat management plan or a wilderness management plan. An Activity Plan is usually accompanied by an EA, or occasionally an EIS (for a more complex situation).

A Project Plan is a very detailed, site-specific plan for developing a particular project, such as an interpretive kiosk, a wildlife guzzler or a campground. Project plans are usually accompanied by an EA.

In this document, both activity-level planning and RMP Amendment decisions are presented. Preparation of this document follows the BLM's nine-step process for preparing RMPs, which is summarized in Figure 1. (Publication of this document completes Step 7* in this process.) The process focuses on planning issues, which are significant resource problems, concerns or opportunities that strongly affect management direction.

The planning issues are identified after the completion of public scoping. The different ways of solving the issue questions provide the basis for the alternatives. This document presents the Planning Area alternatives (Chapter 2), including the BLM's Preferred Alternative. Background resource information (Chapter 3) and an analysis of the impacts for each alternative (Chapter 4) are also presented.

After considering public comments on this document, the BLM will select the Proposed Plan. The plan can be any one alternative, or mixtures of the actions and prescriptions from the various alternatives. The agency will then release for public review the Proposed Plan and Final EIS, including responses to public comments received on the draft document. The Proposed Plan and Final EIS will also specify activity-level planning decisions, and decisions that amend the RMP.

FIGURE 1

**RESOURCE MANAGEMENT PLAN/
AMENDMENT PROCESS**

Issue Identification

Development of Planning Criteria

Collection of Inventory Data & Information

Management Situation Analysis

Formulation of Alternatives

Estimation of Effects of Alternatives

***Selection of Preferred Alternative
(Draft RMP Amendment/EIS)**

**Selection of Resource Management Plan
(Proposed RMP Amendment/Final EIS)
(Approved Plan Amendment/Record of Decision)**

Monitoring & Evaluation

When the BLM releases the Proposed Plan/Final EIS, affected parties who participate in the planning effort may protest the decisions that amend the RMP. (To protest an RMP Amendment decision, the protester must have made comments during the public review period provided for the Draft Plan and EIS.) After any protests are resolved, the BLM will prepare an Approved Plan and Record of Decision (ROD). Once the ROD is published, parties adversely affected by activity-level planning decisions may appeal to the IBLA (in accordance with 43 CFR 4.400-.704).

[Note: P.L. 100-225 requires that the plan for the NCA must include the following: implementation plans for a continuing program of interpretation and public education, proposals for public facilities, a management plan for natural and cultural resources, and a management plan for wildlife. The BLM also develops management plans for designated wildernesses. This El Malpais Plan contains these elements; the BLM's management alternatives include prescriptions that, taken together, compose these plans and proposals. No other separate, individual documents containing these elements will be published.]

PLAN AMENDMENTS

If approved, several proposals contained in this document would amend the *Rio Puerco Resource Management Plan* (RMP--USDI, BLM 1986). The RMP amendments would apply to four issues: 1--Recreation (Visual Resource Management), 3--Access and Transportation, 5--Wilderness Suitability and 10--Boundary and Land Ownership Adjustments.

Proposals under Alternatives B, C and D would amend the RMP by adjusting some previously assigned Visual Resource Management (VRM) classes, and by assigning classes to acquired lands outside the NCA that were not addressed in the RMP. Table 2-8 shows a comparison of the acreage in each VRM class by alternative, and the text of Chapter 2 includes a discussion of these proposals. (The VRM classes influence where recreational or other facilities would be located.)

Also under these alternatives, motor vehicle use designations on varying amounts of public land in the Planning Area would be changed from "open" to "limited" (to designated routes and trails--refer to Table 2-10 and the accompanying text in Chapter 2). This change would also apply to acquired lands not addressed in the RMP. Varying numbers of miles of access routes would be designated as "open," "closed" or "authorized" (for use by certain users only--refer to Table 2-11). All changes in motor vehicle use or route designations would amend the RMP.

For Issue 5, Wilderness Suitability, under the different alternatives the BLM would recommend varying amounts of acreage contiguous to the Cebolla Wilderness for designation. Under Alternative A, the 10,380 acres considered (refer to Map 25) would not be recommended, so the RMP decision would not be amended. The BLM would amend the RMP under Alternative B by recommending the designation of an additional 3,640 contiguous acres as wilderness (refer to Map 26). Under Alternative C, the agency would recommend the designation of an additional 9,180 contiguous acres (refer to Map 27), as well as the 18,300-acre Chain of Craters WSA. Under Alternative D (the Preferred Alternative), the agency would amend the RMP by recommending the designation of 3,930 contiguous acres as part of the Cebolla Wilderness (refer to Map 28).

Proposals under Alternatives B, C and D would amend the RMP for Issue 10, Boundary and Land Ownership Adjustments, by recommending various NCA boundary changes. These changes are described in more detail in Chapter 2 under the discussion of this issue for each alternative.

ENVIRONMENTAL CONCERNS NOT WARRANTING DETAILED ANALYSIS

NEPA regulations require that the following environmental concerns be considered in this document. They have been reviewed and for the reasons stated were determined not to warrant detailed analysis. These elements will also be reviewed during project-level environmental analysis to implement this plan.

1. Wild Horses and Burros--None of these animals are known to exist in the Planning Area.

2. Air Quality--Recreation, other activities and natural occurrences may cause dust, while smoke from fires may result in air quality standards being exceeded for short periods of time. Implementation of management prescriptions to meet vegetation objectives (refer to Chapter 2) should reduce

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dust and minimize fire-created smoke. No actions proposed in this document are expected to cause substantial adverse effects to air quality. These effects will be assessed in EAs prepared to implement this plan.

3. Hazardous Materials--No sites within the Planning Area have been identified to contain hazardous substances. If such sites are identified in the future, all surface and/or subsurface activities will be suspended until the BLM obtains direction from the appropriate federal and/ or state regulatory agency.

4. Prime and Unique Farmlands--During the homesteading era (1930s-1940s) numerous small, family dry-farming operations were scattered throughout the Planning Area. These small farms disappeared by the end of the 1940s, and today no farming is occurring there. Because of the lack of water, the large lava flows and shallow rocky soils, no prime and unique farmlands exist within the Planning Area.

5. Floodplains--In the Planning Area, runoff results from high-intensity summer rainstorms and occasional snowmelt. As the area is a closed basin with no perennial streams, no floodplains exist.

6. Wild and Scenic Rivers--In investigating public land within the Planning Area, the BLM has found no rivers or segments that would meet eligibility criteria (as defined by the Wild and Scenic Rivers Act) for inclusion as components of the National Wild and Scenic Rivers System.

PLANNING ISSUES & CRITERIA FOR THE EL MALPAIS PLAN

As shown in Figure 1, issue identification is the first step in the BLM's planning process. For a given planning area, the **issues** are **significant problems, concerns or opportunities that strongly affect management direction.** They can be identified by the general public, American Indian tribes, other federal agencies, state and local governments, and BLM staff. After all tentative issues have been identified, the Field Office Manager selects the topics to be addressed as issues for the RMP Amendment/EIS. These issues are the center or focal point of the plan.

The characteristics of **planning issues** include the following:

- They represent significant decisions that must be made.
- They are controversial (problems or opportunities) and demand management attention.
- They raise choices to which alternative management responses can be made.
- They can be dealt with under BLM authority and jurisdiction.
- They lead to an action (i.e., protection, designation, or special management).
- They do not pertain to a subject already resolved in a previous plan or environmental analysis unless new information shows that the previous decision is no longer accurate.
- They apply to most or all of the Planning Area. They are not so site-specific as to be more appropriate for an activity-level plan.

Planning criteria are **the factors the BLM evaluates to develop answers to (decisions about) the issues**. These criteria direct the preparation of the RMP Amendment/EIS, establishing limits on the analysis needed to resolve the issues. They determine how the planning team approaches the development of alternatives and ultimately, selection of a Preferred Alternative.

Planning criteria consist of discretionary (optional) and non-discretionary (required) standards. Examples of non-discretionary criteria are various applicable laws (such as FLPMA and the Endangered Species Act), regulations, policies and Executive Orders. Discretionary criteria are reflected in the next section.

The following issues and criteria are based on input from the public and the planning team during the scoping process. These issues represent resource or program areas for which the BLM anticipates changes in management direction within El Malpais as a result of the planning process. The issues are not listed in order of priority.

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[Note: Some issues raised during scoping meetings are not addressed because they are outside the BLM's jurisdiction, are covered by previous plans, or can be better handled through day-to-day, standard operating procedures. Examples of issues outside the BLM's control include grazing fees, water rights or other matters determined by law or regulation, or those controlled by other agencies. Interpretation and public education were originally listed as a separate issue. However, the BLM has determined that these concerns can be adequately resolved administratively. These management tools are discussed with the other issues they support.]

Issue 1--Recreation

Designation of the NCA by the Congress gave formal recognition to the area's public recreational values. The area is relatively undeveloped but attracts visitors who want to participate in a variety of recreational activities and settings. The recreational demand in the Planning Area is expected to increase because of population growth within a day's driving time of the area, its accessibility from three highways, and the increased publicity the area is receiving.

Issue Questions

- What range of recreational opportunities (e.g., off-road vehicle touring, biking, horseback riding, backpacking, hiking) should be provided to meet the wide variety of public demands?
- What BLM actions are needed to provide these recreational opportunities?

Planning Criteria

The BLM has considered the following factors in developing answers to the above questions.

* Existing recreational use and facilities;
* Public demand for recreational activities, settings, and opportunities;
* Compatibility with other land and resources uses;
* Public health and safety;
* Public interests and concerns; and
* Coordination with the NPS.

Issue 2--Facility Development

The Planning Area is characterized as a predominantly natural environment with few facilities for the comfort and convenience of visitors. Current facilities include a Ranger Station with interpretive exhibits on the east side; a parking area, trail and restrooms at La Ventana Natural Arch; and a picnic/camping area at the south end of The Narrows. Examples of facilities that could be developed are trailheads, interpretive signing, kiosks, parking areas, toilets, water sources or visitor centers.

Issue Questions

- What level of facility development is appropriate?
- Where should the BLM provide facilities?

Planning Criteria

The BLM has examined the following factors in answering these issue questions.

* Existing facilities;
* Resource protection;
* Visitor health and safety;
* Site location and design;
* Public interests and concerns; and
* Coordination with the NPS.

Issue 3--Access & Transportation (Motorized & Non-Motorized)

Through the RMP, the BLM limited vehicle use in the area to existing roads and trails. The exception is in the two wildernesses (refer to Issue 4), where vehicle use and mechanized travel are prohibited. County Roads 41, 42 and 103, and State Highways 53 and 117 provide access to the Planning Area. Numerous routes exist outside the wildernesses; from these, people use their cars, off-highway vehicles, bicycles, horses and other means to gain access into the Planning Area. The BLM has inventoried these routes.

Also, a route through the Planning Area has been selected for the Continental Divide National Scenic Trail. Access to the route may need to be acquired.

Issue Questions

- What roads and trails should the BLM provide for access to or across the Planning Area's public lands?

- Which roads and trails should be designated as open, limited or closed to use?

- Are new easement acquisitions not identified in the BLM's NCA *Land Protection Plan* (1989) needed to ensure public access?

Planning Criteria

The BLM has considered the following information in answering these issue questions.

* Existing roads and trails;

* Compatibility with other land and resource uses; and

* Public interests and concerns, including those of local American Indian groups.

Issue 4--Wilderness Management

Two designated wildernesses lie within the Planning Area, the West Malpais (39,800 acres) and the Cebolla (62,000 acres). P.L. 100-225 allows for the continuation of livestock grazing, hunting and trapping in these areas. This law also recognizes the need for access by local American Indians for traditional cultural and religious practices, and provides for the scientific use of archeological resources in the Cebolla Wilderness.

Issue Questions

- What actions are needed to protect and preserve the natural features of each wilderness, while offering visitors an outstanding opportunity for solitude or a primitive and unconfined type of recreation?

- How can the BLM provide access for traditional cultural and religious practices by local American Indians and still be consistent with the Wilderness Act?

- What forms of scientific use of archeological resources can or should be authorized in the Cebolla Wilderness? What permit conditions are needed?

Planning Criteria

The BLM has considered the following factors in answering these issue questions.

* Management proposals that benefit the wilderness resource;

* Public interests and concerns; and

* Maintenance requirements for range improvements.

Issue 5--Wilderness Suitability

Before passage of P.L. 100-225, the BLM had designated El Malpais as a Special Management Area. In addition, portions of El Malpais had been designated as an Outstanding Natural Area, a Natural Environmental Area and a National Natural Landmark. Upon passage of the law, these areas became the NCA and the National Monument.

By establishing the NCA, the Congress recognized the outstanding historic, scenic, natural and cultural resources of the area. P.L. 100-225 directs the BLM to conduct a study of the Chain of Craters area and submit a recommendation as to its suitability for inclusion in the National Wilderness Preservation System (NWPS).

Since the NCA was designated, the BLM has acquired some lands contiguous to the Cebolla Wilderness. These newly acquired lands are also being evaluated for their wilderness suitability.

Issue Questions

- Is the Chain of Craters WSA suitable for recommendation for inclusion in the NWPS?

- Do the recently acquired lands within the Planning Area have wilderness values suitable for inclusion in the NWPS?

Planning Criteria

The BLM has examined the following factors in answering these issue questions.

* Mandatory wilderness values of size, naturalness, and an outstanding opportunity either for solitude or for primitive and unconfined recreation;

* Special features, such as landforms or geological expressions;

* Proximity to existing wilderness;

* Contribution to the diversity in the NWPS;

* Ramah Navajo Indian concerns; and

* Manageability of the area as wilderness.

Issue 6--American Indian Uses & Traditional Cultural Practices

Several American Indian groups use the Planning Area for traditional religious and cultural practices. Acoma Pueblo and the Ramah Navajos have taken a strong interest in management of the area; other tribes such as the Zuni, Laguna, Alamo Navajo, and Cañoncito Navajo may also have concerns. Principal issues include access to sacred places and privacy for religious practices, as well as continued access to areas used for hunting, piñon picking, and gathering of other traditional plants and minerals.

Issue Questions

- How can the BLM facilitate traditional cultural and religious practices within the Planning Area?
- What actions can the BLM take to minimize conflict between traditional practices and other uses?

Planning Criteria

To answer these questions, the BLM has considered the following information.

* Traditional cultural and religious practices, uses and sensitive areas, including scheduling and participants;

* NCA legislative requirements; and

* Formal and informal means of communicating and coordinating with local American Indian groups and individuals.

Issue 7--Cultural Resources

The Planning Area is noted for its cultural resources. Archeological sites in this area span the past 12,000 years and are important for the scientific information they contain. At the same time, many of these same sites figure prominently in the history of several local American Indian tribes, and are very important in traditional cultural practices and belief. Other more recent sites provide links to the Hispanic and Anglo history of this area. The BLM manages these resources for their information potential, for their public values, or for conservation.

Issue Questions

- What management objectives should the BLM establish for cultural resources in the Planning Area?
- What actions should the BLM take to achieve these objectives?

Planning Criteria

To develop answers for these issue questions, the BLM has considered the following information.

* The relative importance and sensitivity of known and anticipated cultural resources;

* Their geographic distribution and density;

* Current and potential threats to these resources;

* Public interests and concerns, including those of local American Indian groups; and

* The legislative requirements and history of P.L. 100-225.

Issue 8--Wildlife Habitat

Public lands in the Planning Area provide habitat for a variety of wildlife species. Special management attention is needed to restore, maintain or enhance priority species and their habitats. If these are not properly managed, other uses of the public land can impact wildlife habitat. Integrating habitat management with other resource programs requires careful planning to minimize impacts to priority species and their habitats, while still providing for other uses of the public land.

Issue Questions

- What wildlife species and their habitats should receive management priority?
- What maintenance, improvement, and expansion objectives and actions (including vegetative manipulation) should the BLM identify for these species and habitats?

Planning Criteria

To help answer these questions, the BLM has considered the following factors.

* Input from federal and state wildlife agencies and the scientific community;

* Species and habitat of high public and scientific interest;

* Species habitat requirements;

* Vegetative communities and habitat condition;

* Conflicts between exotic and native species; and

* Maintenance and enhancement of biological diversity.

Issue 9--Vegetation

Vegetation is the common element on which all users of the landscape depend. It provides food and cover for wildlife and domestic animals, and scenic enjoyment for people. It catches rainfall and slows overland flows, reducing soil movement and increasing the amount of water absorbed by the soil. Vegetation thus affects the quantity and quality of water produced from watersheds, as well as the visual quality of an area's scenery.

Issue Questions

- What are the objectives for the vegetative communities the BLM will be managing to attain?
- What measures are needed to attain these objectives?

Planning Criteria

To help answer these questions, the BLM has considered the following factors.

* Protection and enhancement of watershed conditions;

* Unique or fragile soils and vegetation, including threatened and endangered plant species;

* Areas that require increased vegetative cover to reduce soil erosion, increase forage production, and improve wildlife habitat;

* Vegetative treatments or manipulation methods, including prescribed fire; and

* Use of fuelwood harvest and other forestry practices.

Issue 10--Boundary & Land Ownership Adjustments

As the result of recent changes in land ownership and public participation in the planning process, several minor adjustments in the NCA boundaries may be desirable. Also, two relatively small blocks of contiguous public land managed by the Socorro Field Office to the south of the NCA contain resources that would contribute to the NCA. These circumstances raise the question of whether the BLM should recommend modification of the NCA boundaries. Such a modification would require that the Congress pass new legislation. In addition, several other situations exist in which acquisition of lands or interests in lands beyond those identified in the NCA *Land Protection Plan* may be desirable.

Issue Questions

- Should the BLM recommend to the Congress that the NCA boundaries be modified, and if so, in which areas?
- Are there lands or interests in lands the BLM should acquire through exchange, purchase or donation to further the aims of P.L. 100-225?

Planning Criteria

To help answer the above questions for this issue, the BLM has considered the following information.

* Resource values that exist on lands within and adjacent to the NCA;

* Concerns of local communities, governments, and private landowners; and

* The land ownership pattern.

CHAPTER 2

PLAN ALTERNATIVES

INTRODUCTION

This chapter contains a description of the actions and prescriptions proposed to resolve each issue identified in Chapter 1 under the four management alternatives for the El Malpais Planning Area. Four alternatives are presented, each of which has a different blend and balance of resource allocations, uses, and protection. All are based on input from the El Malpais interdisciplinary planning team, other Bureau of Land Management (BLM) staff, and the concerns and issues expressed by the public during the scoping process for this plan. Actions proposed are discussed under "Planned Actions for Each Alternative," which forms the third and major part of the chapter.

Some existing actions, decisions and guidelines have been brought forward into this plan and would be continued no matter which alternative was selected. These have effectively met public needs and/or resolved issues, so the BLM will continue to use them in the Planning Area. They are described in the next section, "Continuing Management Guidance and Actions Common to All Alternatives." The public land, resources, and programs not affected by the resolution of the issues in these alternatives will be managed as outlined in this section and the *Rio Puerco Resource Management Plan* (RMP--USDI, BLM 1986).

All four alternatives comply with the requirements defined in Public Law (P.L.) 100-225 that the NCA be managed to protect geological, archeological, ecological, cultural, scenic, scientific, and wilderness resources, in a manner consistent with the Federal Land Management and Policy Act of 1976 (FLPMA). Together with the Continuing Management Guidance and Actions Common to All Alternatives, each alternative forms a separate and feasible land-use plan.

Also included at chapter's end are discussions of four alternatives the BLM has considered but not analyzed in this plan. The impacts of each alternative analyzed are discussed in Chapter 4.

CONTINUING MANAGEMENT GUIDANCE & ACTIONS COMMON TO ALL ALTERNATIVES

This section describes the program objectives, resource management guidance, and activities that will continue in the Planning Area regardless of the alternative selected under this plan. These are based on BLM policy, the "Continuing Management Guidance" of the *Rio Puerco Resource Management Plan*, and the special management constraints specified in P.L. 100-225. Management guidance for resource programs is found in laws, Executive Orders, regulations, manuals and instruction memoranda from the BLM Washington Office, the BLM New Mexico State Office, and the BLM Albuquerque Field Office.

Recreation

Program Goal

The BLM's goal for this program is to ensure the continued availability of quality outdoor recreational opportunities and experiences that are not readily available from other sources. Recreational use and capital investment in facilities are managed to protect the health and safety of visitors; protect natural, cultural, and other resource values; stimulate public enjoyment of public land; provide for universal access (including for physically challenged visitors); and to the extent possible, resolve user conflicts. Management priority is given to undeveloped areas experiencing resource damage, user conflicts, or threatening visitor safety; areas where use exceeds current capacity; unique and/or scenic attractions adjoining heavily traveled highways; and preservation and protection of natural and cultural resources.

Management Common to All Alternatives

Recreation programs are managed according to multiple use principles unless otherwise specified by law (e.g., FLPMA) or BLM policy. In areas formally recognized by the Congress, such as wilderness and National Conservation Areas, providing recreational opportunities requires more intensive management and investment.

The BLM uses the Recreation Opportunity Spectrum (ROS) to inventory, plan for, and administer outdoor recreation resources on public land. A general description of the six ROS classes is contained in Appendix C. ROS objectives for the NCA are those indicated in the Rio Puerco RMP. Table 2-6 under Alternative A displays land acreage for each of the three ROS classes in the Planning Area by alternative.

For any project proposed in the Planning Area, the BLM will continue to evaluate recreation resources on a case-by-case basis as part of project-level planning. Such evaluation will consider the compliance of the action with current management plans, the significance of the proposed project, and the sensitivity of recreation resources in the affected area. Stipulations will be attached as appropriate to ensure compatibility of projects with recreation management objectives.

Hunting and trapping are permitted in the Planning Area and must comply with all applicable New Mexico Department of Game and Fish regulations. Patrols (Operation Respect) will continue during hunting/trapping seasons.

Monitoring will be used to protect recreation resources and prevent their degradation. Traffic and trail counters will be used to measure visitor use. The BLM uses the monitoring system, Limits of Acceptable Change (LAC), to determine the need to modify use allocation or management. Certain limits have already been established for the Planning Area, and these will be used to trigger actions (management modifications) called for in this plan (refer to Appendix D).

Recreation Partnerships

The BLM will continue to cooperate with the National Park Service (NPS) in developing, constructing, and operating the Northwest New Mexico Information Center near Grants, New Mexico. The agency will also continue to produce its own interpretive materials, and will maintain its partnership with the Public Lands Interpretive Association (formerly the Southwest Natural and Cultural Heritage Association) or another natural history organization to provide maps and other publications for visitors.

As required by P.L. 100-225, the BLM will identify sites in the NCA that are appropriate for addition to the Pueblo Heritage Trail (formerly the Masau Trail) and inform the NPS of them. To assist with its goals of public outreach, interpretation, and environmental education, the BLM will develop and maintain cooperative agreements and contacts with teaching institutes, research institutes, and non-profit organizations.

The BLM will continue to support and cooperate with Los Amigos del Malpais, a volunteer association that has been assisting with managing El Malpais since 1987. Several group members are trained as hike leaders, and others regularly staff the Ranger Station.

Special Recreation Permits

Under all alternatives, the BLM will continue to issue special recreation permits to qualified outfitters and guides when requested, following the permitting process, which includes an Environmental Assessment (EA). Permits issued will be consistent with resource protection objectives, and set up to reduce user conflicts. Examples of activities sometimes covered under these permits are guided and/or outfitted hunting, mountain biking events, pack-animal trekking, commercial photography or other commercial outfitting. These include commercial, competitive and organized uses of public lands. However, no motorcycle race or other off-road vehicle competitive event will be allowed, as it would not be compatible with the intent of P.L. 100-225.

Management of Existing Facilities

Recreational facilities and actions already completed at the Ranger Station and La Ventana Natural Arch will continue to be managed for intensive use, with emphasis on completing approved projects. For example, the BLM will develop a ½-mile-long (round trip) interpretive/orientation nature trail at the Ranger Station (USDI, BLM 1990). The agency will also continue to provide interpretive programs, exhibits and demonstrations at this facility. At the arch, the BLM will develop and maintain interpretive wayside exhibits that emphasize wilderness, wilderness use ethics, and area geology.

Trails

Through project-level planning, the BLM will propose and develop trails for projected visitor use and needs (refer to the "Access and Transportation" section in this chapter). All trail designs will incorporate accommodations for universal access. Construction and location of trail treadways will take into consideration and avoid, if possible, conflicts with private waters, private lands, and sensitive cultural resource sites.

The BLM and other agencies are developing a treadway for the Continental Divide National Scenic Trail (CDNST). The corridor for the trail was established in a Plan and EA developed jointly by the U. S. Forest Service (USFS) and the BLM (USDA, FS 1992, 1993).

Cave Management

The BLM will conduct an inventory of cave (lava tube) resources and continue to manage caves in accordance with the Federal Cave Resources Protection Act of 1988 and related BLM policy. Significant cave locations will not be made public, and any actions that could adversely affect significant caves will be deferred or denied. The BLM will undertake appropriate protection measures as needed.

Visual Resource Management

Program Goal. The BLM seeks to manage public lands to protect or enhance the quality of visual (scenic) values.

Management Guidance. The Visual Resource Management (VRM) system is the tool for identifying areas that warrant special management attention to protect scenic values and prevent irreparable damage to them. Visual values will be identified through the VRM inventory guidance in BLM Manual Section 8410. The Contrast Rating System identified in BLM Manual Section 8431 will provide the means to evaluate proposed projects in the Planning Area and determine whether they conform with approved VRM objectives.

Interim VRM Classes will be established where a project is proposed and no RMP-approved VRM class objectives exist, including on Planning Area lands acquired after 1986. The agency will establish these interim classes using procedures identified in BLM Manual H-8410-1. The classes will remain in effect until VRM objectives are assigned when this plan is approved.

Management Common to All Alternatives. The BLM will administer visual resources in the Planning Area according to the objectives for each VRM class established through the land use planning process. The agency will continue to seek to acquire a scenic or conservation easement along federal, state and county roads passing through the Planning Area to prevent the views along these roads from being obstructed or degraded by developments. (Refer to Appendix E for description of each of the four BLM VRM Classes and management objectives.)

VRM Class I is assigned to Congressionally designated wilderness to maintain its existing scenic values. VRM Class II is assigned to all lands under wilderness review until they have been released from further review or designated as wilderness. Classes II, III, IV will be assigned to other areas based on a combination of scenic quality, sensitivity level, and distance zones, and on management decisions based on the RMP or directed by policy.

Monitoring. The BLM's Visual Contrast Rating System (Handbook H-8431-1) will be used to monitor potential visual impacts of non-BLM- and BLM-initiated projects and activities to ensure they are within acceptable limits. Through the RMP amendment and maintenance process, the BLM will maintain the inventory of visual values. Staff from each program involved in resource development work will be responsible to monitor the impacts on visual resources to ensure the changes are within acceptable limits.

Interpretation

Interpretive objectives will be developed for each resource whose management can be assisted through such visitor education efforts. Some proposed objectives are listed below by program; these are not all-inclusive nor final.

- Promote a positive land ethic to visitors, informing them of the importance of using Leave No

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Trace and Tread Lightly recreational skills. Safety information is paramount. (Recreation)

- Wilderness has special values, and is set aside to protect them while allowing visitors to experience them. (Wilderness)

- Using surface waters can cause health problems, camping near surface waters can pollute them, and visitors should respect owners' rights to privately owned water sources. (Soil, Water & Air)

- Visitors should be informed of the importance of dead and living wildlife trees, dead and down trees and logs, and wetlands to wildlife; the disturbance caused by human-wildlife interaction; and hunting and trapping opportunities and requirements on public lands in the Planning Area. (Wildlife)

- Livestock grazing is a legal activity in the Planning Area, and it is important to maintain and protect fences, waters, gates and other range improvements. (Rangeland Management)

- Vegetative manipulation plays a part in conserving our public lands, including fire and fuelwood harvesting. (Vegetation)

- Visitors should be informed of significant geologic features and the physical processes that produced them. (Geology)

- Cultural resources are important in understanding local history, especially for local American Indians, so sites should not be disturbed. Under the Archeological Resources Protection Act (ARPA), monetary rewards may be offered for information leading to the arrest and conviction of violators. (Cultural Resources & American Indian Practices)

Access & Transportation

Program Goals

This program seeks to provide adequate access to meet the needs of all users, including those with physical challenges, to BLM facilities and resources, while reducing conflicts between users and preventing damage to natural resources. The agency designates all public lands as open, limited, or closed to motorized vehicle use, and determines whether restrictions are needed to manage nonmotorized uses (e.g., hiking, mountain biking, horseback riding).

Management Guidance

Management of motorized access to and across public lands is directed by Executive Order 11644, as amended by Executive Orders 11989 and 12608. Guidance to enact these Executive Orders is provided in BLM Manuals 8342, 8300, H-9114-1 and Titles 8340 and 8364 of the Code of Federal Regulations (CFR). The New Mexico Roads Policy [Instruction Memorandum (IM) NM-95-031] provides direction for constructing, maintaining, rehabilitating, abandoning and closing roads under BLM jurisdiction. Additional New Mexico guidance is provided through IM NM-95-083 (Transportation and Access Management) and IM NM-94-098 (Off-Highway Vehicle Management). Nonmotorized uses are controlled through 43 CFR 1600 and restricted under 43 CFR 8364.1.

The BLM has identified motor vehicle routes of travel in a 1996 survey. Any new routes in the Planning Area created by management action or land acquisition will be designated through this plan or an activity-level plan amendment.

Management Common to All Alternatives

In accordance with P.L. 100-225, the American Indian people recognized as using the NCA are ensured nonexclusive access for traditional uses and cultural purposes. Such access must be consistent with the American Indian Religious Freedom Act and the Wilderness Act.

Existing state, county, and private roads with valid rights-of-ways will remain open. The BLM will work with these entities, the NPS, USFS and private individuals on a case-by-case basis to build, realign, upgrade and rehabilitate roads that lie within the Planning Area or access the National Monument through the Planning Area. The 18.4 miles of arterial vehicle routes identified in the 1996 inventory will remain open for use by the public, except when they are closed by natural occurrences or in emergencies (i.e., to protect resource values, promote the safety of all users, or minimize conflicts among various users).

Non-commercial, nonmotorized and non-mechanized forms of access (e.g., backpacking, hiking, walking and horseback riding) will continue. Acquired land will be managed for motor vehicle use in the same manner as adjacent land with the same designation.

Monitoring

Monitoring will be done with a frequency based on the level of use, as well as resource and safety concerns. The BLM will gather information to ensure compliance with area and route designations, identify the need to modify these designations, provide and maintain adequate motorized and nonmotorized access, protect resource conditions, and initiate emergency limitations or closures. **If monitoring shows that transportation use is causing or will cause adverse effects on resources beyond acceptable limits, is putting the safety of users at risk, or is allowing significant user conflicts to occur beyond acceptable limits, corrective actions will be taken.**

Wilderness

Program Goals

Through this program, the BLM identifies lands with wilderness characteristics, and recommends for designation those on which wilderness is the most appropriate land use. To preserve wilderness character as the Congress has directed, the BLM bases its wilderness management on principles of improvement and non-degradation. Under these principles, the intent is to prevent degradation of natural conditions, opportunities for solitude or primitive recreation, and special features located within the area; and to improve conditions where possible.

Four standard management goals established by the BLM for designated wilderness are as follows.

- Provide for the long-term protection and preservation of the area's wilderness character under the principle of non-degradation. Manage the area's natural condition; opportunities for solitude or primitive and unconfined types of recreation; and any features of ecological, scientific, educational, scenic, or historical value present so they remain unimpaired.
- Manage the area so visitors can use and enjoy it, but only in a way that leaves it unimpaired for the future. The wilderness resource is dominant in all management decisions in which a choice must be made between preservation of wilderness and visitor use.
- Manage the area using the minimum tools, equipment, and structures needed to successfully, safely, and economically accomplish tasks while least degrading wilderness values, temporarily or permanently. Preserve spontaneity of use and as much freedom from regulation as possible.
- Manage the nonconforming but accepted uses allowed by the Wilderness Act and subsequent laws in a way that prevents unnecessary or undue degradation of the area's wilderness character. Nonconforming uses are the exception rather than the rule; emphasis is placed on maintaining wilderness character.

Management Guidance

Wilderness is managed according to the provisions of the Wilderness Act, as amended; FLPMA; BLM Manuals 8560, H-8560-1, and 8561; New Mexico BLM Manual Supplement 8100/8560; the BLM's Wilderness Management Regulations (43 CFR 8560); and the specific directives contained within P.L. 100-225.

For the Chain of Craters WSA and additions to the Cebolla Wilderness, supporting analyses to determine wilderness suitability will meet the requirements of the BLM's Wilderness Study Policy (1982). To provide a basis for the Congress to determine whether lands should be added to the National Wilderness Preservation System, each area under wilderness review is being analyzed for its values, resources and uses.

Management Common to All Alternatives

As recognized in P.L. 100-225, the Cebolla and West Malpais Wildernesses will remain as part of the Planning Area. The Chain of Craters WSA will be managed under the BLM's *Interim Management Policy and Guidelines for Lands Under Wilderness Review* (USDI, BLM 1995) to prevent impairment of its values until the Congress decides on its suitability.

If the Congress decided not to designate the lands under review as wilderness and released them from further consideration, the Interim Management Policy would cease to apply. The released lands would be managed under the appropriate RMP or plan amendment.

If the Congress designated all or a portion of the Chain of Craters or any other suitable lands as wilderness, they would be managed under the El Malpais Plan and the guidance identified above. If the designated area could not be incorporated under the El Malpais Plan or an existing RMP, the BLM would develop a site-specific management plan.

Until the Congress decides on the BLM's recommendation, the lands contiguous to the Cebolla Wilderness that are found to be suitable for designation will be managed under the Interim Management Policy, with an exception for mining. Existing and new mining operations under the 1872 Mining Law will be regulated under 43 CFR 3802 only to prevent unnecessary and undue degradation of the lands, not impairment of wilderness suitability. Those lands found to be non-suitable for wilderness designation will be released from interim management after approval of the El Malpais Plan.

All activities in designated wilderness will be carried out in conformance with the mandates of FLPMA, the Wilderness Act, and P.L. 100-225. Hunting and trapping will be allowed to continue under applicable state laws and regulations. Livestock grazing operations established at the time the Cebolla and West Malpais Wildernesses were designated will continue, subject to certain restrictions. Visual resources within designated wilderness will be managed under VRM Class I objectives.

The use of motorized vehicles and mechanical transport will be prohibited, except in emergency situations and as permitted by law for mining, livestock grazing, and private and state land access. Access consistent with the Wilderness Act will be allowed for traditional and cultural religious practices by American Indians. On request, the BLM will temporarily close the smallest practicable area for the minimum period of time needed to accommodate such religious activities.

Boundary adjustments of designated wilderness will be made only through legislation. To enable easier identification of WSA and wilderness boundaries, the BLM will mark them with signs.

The BLM will seek to acquire all private surface lands and subsurface (mineral) interests within wilderness. Higher priority will be given to acquiring lands that are undeveloped, or those on which mineral development threatens the area's wilderness character. Once acquired, these lands will be managed as wilderness. Acquired subsurface interests within the existing NCA boundary will be withdrawn from the mining and mineral leasing laws, and from disposal under the public land laws. If an owner of private mineral interests within wilderness wishes to develop them, the BLM will work to provide reasonable access and development opportunities with the briefest impacts on wilderness character.

Monitoring

Monitoring of lands under wilderness review is guided by the Interim Management Policy (BLM Handbook H-8550-1). This monitoring is done at least once a month when the areas are accessible by the public to ensure compliance, and to gather data on use and condition. Non-degradation of biophysical and social conditions is achieved through the Limit of Acceptable Change (LAC) management system and the VRM system. If needed because of potential use activities or resource conflicts, or to help detect changes in wilderness conditions and opportunities, monitoring may be done more frequently. All authorized and unauthorized actions within a wilderness or study area are recorded; when needed, the BLM establishes a case file.

Specific conditions for monitoring authorized projects are identified when each proposal is evaluated and authorized. Monitoring procedures and schedules for range improvement maintenance are identified in the Range Improvement Maintenance (RIM) Plans for the two wildernesses.

American Indian Uses & Traditional Cultural Practices

Program Objectives

The BLM seeks to consider the effects its actions may have on American Indian uses and traditional practices, and to minimize those effects.

Management Common to All Alternatives

A number of laws and regulations require close consultation between the BLM and American Indian tribes with interests in lands administered by the agency. These include the American Indian Religious Freedom Act (AIRFA), the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the Religious Freedom Restoration Act. P.L. 100-225 underscores these responsibilities by its emphasis on traditional cultural practices.

Under these laws, several processes require formal consultation with American Indian tribes. One example is the ongoing consultation required by NAGPRA regarding repatriation of burials, grave goods, and objects of cultural heritage taken from public lands over the years. Any activity that requires a permit under ARPA on Albuquerque Field Office lands also triggers a formal consultation with potentially interested tribes.

For the most part, traditional cultural practices within the Planning Area are private matters of concern only to the tribes and individuals who are directly involved. It is therefore not appropriate for the BLM to develop alternative management actions specifically related to traditional cultural practices. However, this issue is an important consideration in formulating alternatives for other issues and in analyzing impacts that could result from implementing the alternatives.

For routine activities, the BLM relies on public participation in its land use planning process as an initial screen to identify areas and issues of particular concern to American Indian tribes. After broad land use plans such as the RMP and this plan have been completed, more specific activity plans or proposals for particular projects are evaluated through an environmental analysis process mandated by the National Environmental Policy Act.

The BLM also prepares an annual RMP Update that lists projects anticipated in the coming year. This update is sent to a broad mailing list that includes the Acoma, Laguna, and Zuni Pueblos, as well as the Ramah Navajo Chapter. For all except minor projects, the BLM sends a scoping letter to these American Indian groups 30 days in advance of any project-specific analysis, and after all analyses have been completed, sends copies to the groups.

The BLM attempts to maintain effective informal lines of communication through frequent interaction with the Pueblo tribes and Navajo chapters who have expressed a strong interest in management of the Planning Area. The objective is to encourage communication while still recognizing the need for privacy in many situations. The agency responds when these groups express concerns.

Cultural Resources

Program Goals

This program is established to protect archeological, historical, and sociocultural properties, and to provide for their use as allocated through land use planning.

Management Common to All Alternatives

Federal laws such as the National Historic Preservation Act (NHPA) of 1966, the Archeological and Historic Preservation Act of 1974, ARPA (1979), AIRFA (1978), and FLPMA (1976) provide for the protection and management of cultural resources. P.L. 100-225 establishes protection of archeological and scientific resources as one of the principal purposes of the NCA, placing special emphasis on preservation and long-term scientific use of archeological resources.

Use Allocation

BLM Supplemental Program Guidance for Land Resources (Manual 1623.1) requires that RMPs include management objectives for all cultural resources known or likely to occur in the Planning

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Area. At the activity plan (or Cultural Resource Management Plan) level, cultural resources are allocated to certain uses. The three categories established for management objectives and six categories established for use allocation are shown in Table 2-1. (The terms themselves are defined in the Glossary.) Under any alternative, cultural resources that meet the definition of an "Isolated Manifestation" will be allocated to the "Discharged Use" category after they have been adequately documented. Otherwise, the allocation of different types of cultural resources varies among the four alternatives.

Compliance with the National Historic Preservation Act

Before any surface-disturbing or other activity that could affect cultural resources, the BLM routinely conducts an intensive (Class III) inventory to ensure that important resources are not inadvertently damaged. The agency then completes administrative steps required by NHPA, including consultations with the New Mexico State Historic Preservation Officer. These measures will remain in effect under any alternative proposed in this plan.

P.L. 100-225 places special emphasis on preserving cultural resources, so projects within the NCA that could affect these resources are generally held to a higher standard than projects outside the NCA. Under any alternative, if a question is raised about the appropriate level of inventory, the significance of resources that might be affected, or the potential impact of a proposed action, the BLM will use more cautious and conservative practices.

Inventory & Baseline Documentation

The BLM conducts cultural resource inventories at four levels of intensity (Class I, II, and III, as well as reconnaissance level--refer to the Glossary). Inventory usually consists of inspecting the ground surface for evidence of past human use, and documenting whatever remains are found. In most cases this documentation allows the BLM to evaluate the significance of the property, identify sources of deterioration, and describe the current condition of the property.

In this plan, the alternatives vary in terms of the amount and kinds of inventory proposed in the Planning Area, and the circumstances under which inventories would be conducted. However, these activities and maintenance of the records they generate will continue in one form or another under any alternative.

Permits & Scientific Investigations

To qualified individuals and organizations employing them, the BLM issues permits that authorize various types of cultural resource investigations. Subject to certain restrictions and requirements, the most common permits authorize surveys and minor testing needed to determine whether subsurface archeological remains are present. Typically these are

TABLE 2-1

CULTURAL RESOURCE MANAGEMENT OBJECTIVES AND USE ALLOCATIONS

Management Objective	Use Category
Information Potential	Scientific, Management
Public Values	Sociocultural, Public
Conservation	Conserved for Future
(None)	Discharged

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state-wide permits. Under any alternative, the BLM will continue to issue these permits within the Planning Area.

Permits that authorize the collection of artifacts, formal archeological testing, or more intensive investigations are issued under ARPA. As part of the permitting process, detailed information about the proposed activities, curation arrangements, and consultations with local American Indians are required. Some of the alternatives in this plan would allow continued issuance of ARPA permits under certain circumstances, while under other alternatives, activities requiring these permits would be greatly restricted.

Patrol & Surveillance

Enforcement is accomplished largely by BLM Rangers, who patrol back- country areas, maintaining a presence and looking for violation of ARPA and other acts that protect public lands. Rangers have usually had training specific to ARPA, interact closely with cultural resource specialists to become aware of areas that contain sensitive cultural resources, and exchange information about areas of past or ongoing vandalism. BLM cultural resource specialists and volunteers also visit sites and sensitive areas on a regular basis. These activities, referred to as "patrol and surveillance," will continue under any alternative.

Monitoring

The BLM monitors the condition of cultural resources at two different levels of intensity. At the lowest level, these resources are formally recorded and their present condition documented. This documentation then serves as the basis for evaluating the property and assigning it to a use category. It also provides baseline information against which the future condition of the resources can be compared. At this level no time period is specified for follow-up inspection. Comparisons between baseline condition and current condition are made when a change is suspected.

For a handful of especially important and/or vulnerable sites, the BLM conducts a more formal and intensive program of photo-monitoring. At these sites a series of standardized photographs is taken from defined locations at set intervals, typically once a year. These photographs document any changes in physical appearance of the sites. This level of monitoring is more expensive and time-consuming and has only been implemented for a small number of Planning Area sites, including the Dittert Site, Oak Tree Ruin, and Arroyo Ruin.

Wildlife Habitat

Program Goals

The BLM wildlife program focuses on habitats for terrestrial, aquatic, and special-status species (including threatened and endangered), and on rare or representative habitats or ecosystems. These habitats are managed to maintain or enhance the desired conditions that support the variety of wildlife species using the Planning Area. BLM staff members identify opportunities to maintain, improve, and expand wildlife habitats on public lands consistent with other consumptive and non-consumptive uses. They also identify and manage priority species and habitats (including rare and representative habitats, plant communities, and biological diversity).

The agency has a broad interest in managing the habitat of all wildlife as part of its overall multiple use program outlined in *Fish and Wildlife 2000* (a national planning and policy document for wildlife management into the year 2000--USDI, BLM 1988). New Mexico BLM has developed a version of this document that outlines specific objectives in managing the wildlife program statewide (USDI, BLM 1989). Other federal laws and policies that direct the BLM to improve the management of habitat to meet wildlife needs include FLPMA, the Endangered Species Act (ESA--1973 as amended), the Public Rangelands Improvement Act (1978, as amended), BLM Manual Section 6840, and program policy emphasizing Fish and Wildlife 2000 practices and biological diversity. The Albuquerque Field Office's wildlife habitat management program is also influenced by various memoranda of understanding and cooperative agreements.

Management Common to All Alternatives

The BLM's coordination with the New Mexico Department of Game and Fish (NMDG&F), the U.S. Fish and Wildlife Service (FWS) and other federal,

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state, and local agencies is an important part of managing wildlife habitats within the Planning Area and will continue under any alternative selected.

Habitat Management Plans & Special Designations

The BLM has developed an activity-level Habitat Management Plan (HMP) to enhance wildlife habitats in a large portion of the Planning Area, primarily for deer, antelope, turkey and Abert's squirrel. The *El Malpais Wildlife Habitat Management Plan* (USDI, BLM 1981) contains goals, objectives, and planned management actions, and is revised to satisfy changes in law, policy, and RMP decisions. Additional HMPs may be developed and other special designations identified for priority habitats where appropriate (e.g., Research Natural Areas).

Habitat Maintenance, Improvement & Expansion

All range and watershed improvements will continue to be designed to achieve range, watershed and wildlife objectives for maintaining, improving or enhancing habitats, particularly for priority species. This includes location and design of waters and vegetative manipulation projects.

All properly functioning springs and associated riparian/wetland habitats on BLM-administered lands will be maintained at that level (USDI, BLM 1993; 1994). Those features in the Nonfunctional or Functional--At Risk categories will be managed to improve them to the Properly Functioning Condition category (refer to the Glossary). The BLM will maintain or improve these features either by using livestock exclosures, or by implementing grazing management practices to maintain and/or improve them to properly functioning condition.

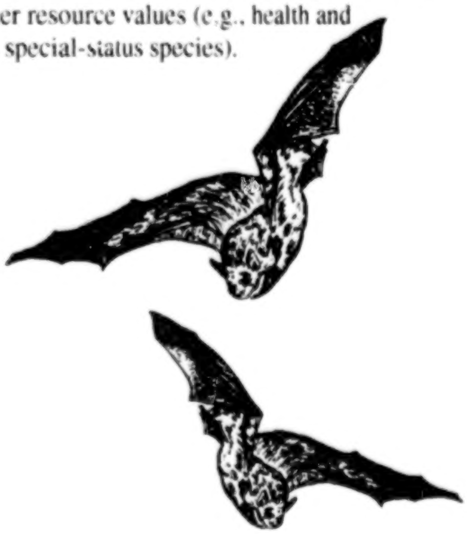
In accordance with BLM fence standards, new fences will be designed to allow for wildlife passage. Any existing fences that block wildlife movements will be modified. Wildlife escape ramps will be installed in all new and existing water tanks or troughs within the Planning Area.

Existing wildlife projects will be properly maintained (refer to Table 3-10 in Chapter 3). Any project not working as intended will be evaluated to determine if it is still needed as originally designed. All needed projects will be modified to work.

By scheduling use/non-use in critical wildlife areas during the appropriate season and to the greatest extent possible, the BLM will design and implement new livestock grazing systems to protect wildlife habitats (e.g., antelope winter range). New roads or trails will not be built into sensitive wildlife habitats, and those in other areas will be designed whenever feasible to direct visitors away from sensitive areas. The BLM may close roads or trails permanently or seasonally where problems exist or are expected to occur within sensitive wildlife areas.

Raptor protection will be improved by requiring all new powerlines to be built to "electrocution-proof" specifications (Olendorff, *et al.* 1981). To avoid potential collisions with powerlines by migrating birds, the BLM will incorporate mitigating measures as identified by the Avian Power Line Interaction Committee (1994) into all new powerlines where applicable. Any existing lines that are identified as causing electrocution and/or collision problems may also be modified where feasible.

Animal damage control activities on public lands within the Planning Area are guided by the Master Memorandum of Understanding between the Animal and Plant Health Inspection Service, Animal Damage Control (APHIS-ADC) and the BLM (USDA, APHIS 1995). The APHIS-ADC conducts animal damage control activities on BLM-administered lands, while the BLM identifies any special concerns for other resource values (e.g., health and safety, special-status species).



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Inventory & Environmental Analysis

The BLM Albuquerque Field Office maintains an inventory of wildlife habitat and species occurrence for use in land use planning, habitat management, and multiple use decisions. These inventories identify important areas used by many species for breeding, migration, cover, resting and feeding, such as forests, wildlife snags, playas, wetlands, perennial springs and streams, raptor nesting areas, prairie dog towns, and sensitive use areas (for antelope fawning or elk calving, for example).

The agency reviews and analyzes all management actions in the Planning Area to determine whether they could affect wildlife (including special-status species) and/or their habitats. Also considered are impacts to habitat improvement projects, and compatibility with the NMDG&F comprehensive wildlife plan and population goals. Before the BLM authorizes activities in sensitive wildlife habitats (e.g., winter ranges, raptor nesting areas, fawning areas) staff members consider how to avoid or minimize disturbances.

Monitoring

Wildlife habitat monitoring follows BLM Manual 6600. In addition, the BLM follows recommendations in the text, *Inventory and Monitoring of Wildlife Habitat* (Cooperrider, *et al.* 1986) when designing inventory and monitoring efforts. In monitoring condition and trend on key/sensitive wildlife use areas, wildlife staff coordinate with range and watershed staff. Water quality monitoring of natural springs used by wildlife is coordinated with the soil, air, and watershed staff. All existing wildlife projects (e.g., water developments, wildlife exclosures) are monitored regularly to determine any maintenance needs.

Threatened, Endangered & Other Special-Status Species

Program Goal

The goal of this program is to protect and/or enhance the habitats of threatened, endangered and other special-status species and to ensure their continued existence in the Planning Area. Special-status species are plants and animals that fall into one of five groups, including those: listed as endangered or threatened under the Endangered Species Act (ESA); proposed for listing as endangered or threatened under the ESA; candidate species (formerly Category 1 species); species of concern (formerly Category 2 species), designated by the BLM State Director as sensitive; or listed by the state government as endangered or threatened (state listed).

BLM policy is to ensure the implementation of the ESA, as amended, and FLPMA. The agency is committed to comply with the ESA, other applicable laws, regulations, BLM policies and manual requirements.

The BLM is conducting informal consultation with the FWS under Section 7 of the ESA, which is anticipated to be completed by early 1999 and will determine if formal consultation on any specific species or habitat is needed. Seven species in the Planning Area are listed as threatened or endangered (the black-footed ferret, American peregrine falcon, Arctic peregrine falcon, bald eagle, Mexican spotted owl, Southwestern willow flycatcher and Zuni fleabane), one is proposed to be listed as threatened (puzzle sunflower), and one is listed as a candidate (mountain plover). These are all included in the consultation process. In addition, 18 species listed as BLM sensitive and 12 listed as state endangered or threatened are known or have the potential to occur within the Planning Area (refer to Appendices F, Wildlife and G, Plants).

Management Common to All Alternatives

The BLM has a complex set of responsibilities for managing the habitat of threatened, endangered (T&E) and other special-status plants and animals. Section 7 of the ESA requires that federal agencies carry out programs to conserve listed species, and to ensure that their actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat. Under agency policy and guidance, the BLM manages all candidate and BLM sensitive species for their conservation and that of their habitats. The agency strives to ensure that its actions do not contribute to the need to list any species as threatened or endangered.

The BLM also manages to conserve state-listed plants and animals. As long as they are consistent with FLPMA and other federal laws, state laws protecting these species apply to all BLM programs and actions.

Habitat & Species Management

Protection of T&E and other special-status species is ongoing on Albuquerque Field Office lands, including the Planning Area. All standard wildlife stipulations and mitigation measures for proposed actions will be used to ensure that no "may affect" FWS determinations to T&E and other special-status species will occur.

The BLM will work with the FWS to implement recovery strategies for T&E species. Three recovery plans now are being implemented, for the black-footed ferret, Mexican spotted owl, and peregrine falcon.

Inventory & Environmental Analysis

Inventories for special-status species and/or their habitats will follow BLM Manual 6600 and official procedures outlined by the FWS.

Under any alternative, actions will not be allowed to occur where they will affect T&E or other special-status species or their habitats. This commitment will be met by preparation of an EA before any action is permitted. The EA process will include identifying any such species in or near the area of activity; adjusting the project design, size, or location; applying appropriate stipulations (e.g., timing); or not authorizing the action.

To protect T&E and other special-status species, the BLM will use the following approach in reviewing actions proposed on agency-administered lands.

- Analyze all proposed actions to determine if T&E and other special-status species or their habitats may be affected.
- Consult with the FWS under Section 7 of the ESA when actions may affect a federally listed threatened or endangered species or its habitat, and adverse impacts cannot be eliminated. (Note: Both beneficial and adverse impacts can be part of a "may affect" determination.) During the consultation process, the BLM will not authorize any action that will cause any irretrievable or irreversible impacts.
- For "may affect" actions from which adverse impacts cannot be eliminated, initiate an informal conference, and consider requesting technical assistance from the FWS (for federal candidates) or the State of New Mexico (for state-listed species).
- Ensure that no agency action or authorization will adversely affect the likelihood of recovery of any threatened, endangered or other special-status species.

Monitoring

Monitoring efforts for special status-species and/or their habitats will follow BLM Manual 6600 and official procedures outlined by the FWS.

Vegetation

Potential Natural Communities

Program Goal & Objectives

The goal of the vegetation program for the Planning Area is to complement natural ecological processes with management practices that will provide for the establishment of the Potential Natural Communities (PNCs). Based on its soils, other physical features and climate, the environment in the Planning Area is capable of supporting four different PNCs: Grass-Shrub, Piñon-Juniper, Ponderosa Pine, and Lava Complex (USDA, SCS 1993). These are the communities that would become established if natural processes were allowed to be completed (refer to Chapter 3 and Appendix K for more information). The community goals are long-term targets that are not expected to be reached during the 15- to 20-year life of this plan.

Consistent with the goals, the BLM has developed vegetative objectives for the grass-shrub, piñon-juniper and ponderosa pine communities in the Planning Area. Compared to the goals, these objectives are more species- and site-specific. Progress toward meeting them will be measured during the life of this plan. Specific objectives are shown in Table 2-2 for the grass-shrubland communities and in Table 2-3 for

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the pinon-juniper (woodland) and ponderosa pine (forest) communities.

Management Common to All Alternatives

Management for the PNC goals and objectives is in accordance with the requirements of P.L. 100-225, which states that the NCA was established to protect the ecological resources of the area (among others). Where the existing vegetation differs from the PNCs, the BLM will consider using practices such as prescribed fires, tree thinning and livestock grazing management to encourage the growth of PNC vegetation. The agency will gather additional information (e.g., vegetative use by livestock and wildlife) to guide these practices.

Monitoring

This topic is discussed below under "Forest and Woodland Resources" and "Rangeland Resources."

Forest & Woodland Resources

Program Goals & Objectives

The BLM's long-term goal for the forest resources in the Planning Area is to manage ponderosa pine stands for increased reproduction, improved stand vigor, and rehabilitation of degraded sites. For the woodland resources, the long-term goal is to maintain healthy piñon-juniper stands. Table 2-3 shows the PNC objectives for woodlands. In addition, the BLM will use forest and woodland management practices such as tree thinning in the Planning Area to help meet the PNC goal discussed above.

(Note: The BLM will conduct no forest or woodland management practices in the Cebolla or West Malpais Wilderness, or the Chain of Craters WSA. If the Congress does not designate the Chain of Craters as wilderness, forest and woodland management practices will be considered there.)

Management Common to All Alternatives

FLPMA requires that forests and woodlands be managed on the basis of multiple use and sustained yield. The Public Domain Forest Management Policy and the Material Disposal Act furnish additional guidelines for managing these areas. P.L. 100-225 specifies that collection of green or dead wood for sale or other commercial purposes is not permitted in the NCA. However, to meet PNC goals and objectives, the BLM can contract for thinning or salvage of wood products outside wilderness and the WSA. When thinning results in a supply of fuelwood, the BLM will notify local groups that the wood is available for home use.

Before proposing any part of the Planning Area for woodland or forest management, the BLM will inventory and evaluate it. Based on the evaluation, the agency will prepare a site-specific EA for public review and comment before any action is taken.

Monitoring

The BLM will conduct site-specific monitoring on treated areas to evaluate success in attaining the vegetation objectives. The agency will also conduct compliance checks to ensure adherence to permit and contract terms and conditions, and will use patrols, surveillance and enforcement to deter unauthorized harvest of wood products. In addition, the BLM will consider using remote sensing information (e.g., satellite data, aerial photographs) to monitor changes in vegetative communities. This information will be evaluated to determine the cause of change, the effects, and any corrective action needed.

Rangeland Resources

Program Goals

The primary goals of this program in the Planning Area are to manage for healthy rangelands and ensure that livestock grazing management on each allotment contributes to the accomplishment of the PNC objectives. Proper management of grazing is essential to ensure that the PNCs are achieved.

Management Common to All Alternatives

The grazing program is authorized by the Taylor Grazing Act, FLPMA, the Public Rangeland Improvement Act, and the grazing regulations (43 CFR 4100, including the recently adopted standards and guidelines for healthy rangelands at 43 CFR 4180). P.L. 100-225 provides for the continuation of livestock grazing within the NCA under these and other applicable federal laws.

TABLE 2-2

POTENTIAL NATURAL COMMUNITY OBJECTIVES FOR GRASS-SHRUBLANDS
(plant composition percentages)

Ecological Sites [a]	Grasses		Woody Plants	Forbs [b]
	Warm Season	Cool Season		
Clayey	20-45	20-35	10-25	5-10
Clayey Bottomland	25-40	40-60	15-20	10-15
Clayey Woodland	35-45	20-30	10-20	5-15
Loamy	40-60	20-40	10-15	5-10
Loamy Malpais	35-50	20-35	10-20	5-10
Deep Sand	40-60	20-40	5-10	10-25
Foothills	40-60	20-40	10-20, P-J canopy < 25[c]	5-15
Savanna	20-45	15-40	5-15, P-J canopy < 25[c]	5-10

Notes: [a] These are areas that have the potential to produce a unique vegetative community (refer to Appendix K for further explanation).

[b] Forbs are non-woody plants other than grasses.

[c] P-J is piñon-juniper; the canopy is the covering these trees provide above smaller vegetation.

TABLE 2-3

POTENTIAL NATURAL COMMUNITY OBJECTIVES FOR WOODLANDS AND FORESTS
(plant composition percentages)

Ecological Sites	Grasses	Woody Plants	Forbs
Piñon-Juniper Woodlands	50-70	20-30, P-J canopy 20-40	10-15
Ponderosa Forests	60-80	15-25, Ponderosa canopy 10-40	5-15

Livestock grazing management must be coordinated and designed to facilitate other programs. For example, reintroducing natural fire to open ponderosa pine habitat can improve forest health, wildlife forage, and ground cover for watershed. In general, grazing regimes must be designed to allow for frequent, routine rest for all forage species. However, in areas where natural fire is desired as a management tool, such rest from grazing is even more critical. For these areas to burn properly, they must have an understory of fine fuel (i.e., grasses, forbs and shrubs), so livestock must not be allowed to graze there. The BLM must consider burn areas; wildlife projects; management of natural waters, springs and ephemeral flows; wilderness management; and forest and woodland management in planning for livestock grazing management.

The *West Socorro Rangeland Management Program and EIS* (USDI, BLM 1982) contains additional proposed actions and management objectives for public land within the NCA. Grazing management changes to achieve the PNCs will continue to be made, following the guidance established in that document. (Note: In 1983, administration of the public land in Cibola and Valencia Counties was transferred to what is now the Albuquerque Field Office from what is now the Socorro Field Office. Twelve grazing allotments overlapping the Planning Area were part of this transfer.)

(In 1992 the BLM issued decisions to establish new grazing preferences, which included sufficient forage to provide for wildlife needs. Table L-1 in Appendix L displays the grazing preferences before and after the monitoring studies and new decisions. In addition to these adjustments, other changes in grazing management have been ongoing. These are shown in Table L-2 in the same appendix.)

Allotment Management Categories. Sixteen livestock grazing allotments overlap the Planning Area (refer to Map 4 in the map section following this chapter). The BLM has placed each allotment into a "Selective Management Category," based on its existing vegetative (ecological) condition and/or conflicts with other resource uses (e.g., wildlife, watershed). Categorization provides a system for focusing attention on the allotments on which changes in grazing management may be needed. The criteria for grazing allotment categorization are displayed in Table 2-4, with the specific category for each allotment found in Table 2-5.

The I category (Improve) allotments are managed to improve their ecological condition and resolve resource conflicts. These are the allotments on which the BLM can apply vegetative management techniques, where the PNC data indicate the potential is good for change. The M category (Maintain) allotments are managed to maintain current satisfactory resource conditions. The C category (Custodial) allotments typically contain small amounts of unconsolidated public lands, have no resource conflicts, and/or have a low potential for improved resource condition. They are kept in federal ownership, with grazing fees collected, but without large investments of time or money.

Allotment Management Plans. The BLM will continue to implement specific prescriptions to accomplish vegetation goals and objectives through developing and revising Allotment Management Plans (AMPs). In these plans, the agency will outline the manner and extent of livestock grazing management. [Note: The agency is developing Coordinated Resource Management Plans (CRMPs), which are similar to AMPs, for two allotments in the Planning Area, El Malpais (#203) and Cerro Brillante (#207).]

These plans and their revisions are key to ensuring that livestock grazing use is not limiting the accomplishment of vegetation objectives. The plans will be prepared in cooperation with the affected allottee and/or interested parties, and with input from a variety of BLM specialists to ensure that all resource needs (e.g., wildlife, watershed, forestry) are considered.

The BLM will involve the public in preparing each AMP/CRMP, any revisions, and the accompanying EA. Coordination with affected allottees, involved landowners, the Resource Advisory Council, the state and interested members of the public will be part of the AMP/CRMP process.

Improving Livestock Grazing Management. Improvements in livestock grazing management are made by changing one or more of the following: the kind or class of livestock, the season of use, the authorized number of Animal Unit Months (AUMs), or the pattern of livestock grazing. Generally, the BLM

TABLE 2-4

ALLOTMENT CATEGORIZATION CRITERIA

Category M (Maintain)	Category I (Improve) [a]	Category C (Custodial)
An allotment must meet conditions 1, 2 & 3 or 1, 2, & 4 (listed below).	An allotment must meet any one of the following three conditions.	An allotment must meet all of the following conditions.
1. Has no significant resource conflicts, and current grazing management practices are acceptable.	1. Has a potentially significant resource conflict, and current grazing management practices could be improved.	1. Has no significant resource conflicts, and grazing management practices are acceptable.
2. Has only a moderate potential for improvement in forage production (vegetative condition).	2. Has a high potential for improvement in forage production (vegetative condition), and an ecological condition rating of 50 or less.	2. Has a low potential for improvement in forage production (poor soils).
3. Has an ecological condition rating of 38 to 51 and an improving vegetative trend.	3. Has an ecological condition rating of 50 or less and a static or downward vegetative trend.	
4. Has an ecological condition of 51 or higher and a static or improving vegetative trend.		
Other Considerations Contains 30% or more public land or more than 1,540 public land acres.	Other Considerations Contains 30% or more public land or more than 1,540 public land acres.	Other Considerations Contains less than 30% public land or less than 1,540 public land acres.

Note: [a] Regardless of its size, any parcel of public land with an identified resource conflict qualifies for this category.

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TABLE 2-5

SELECTIVE MANAGEMENT CATEGORIES FOR GRAZING ALLOTMENTS OVERLAPPING THE PLANNING AREA

Allot-ment Number	Allotment Name	Selective Management Category	Public Land Acres
201	Cerritos de Jaspe	M	9,138
202	Bright's Well	M	304
203	El Malpais	I	136,195
204	Raney	C	1,980
205	Los Pilares	I	13,998
206	Little Hole-in-the-Wall	C	320
207	Cerro Brillante	I	21,760
208	Loma Montosa	I[a]	7,520
209	Techado Mesa	I	35,099
210	Los Cerros[b]	I	40,109
211	Ventana Ridge	M[a]	3,013
222	Chical	C[c]	1,600
226	Arrosa	C	640
438	Monument Lake	C	3,200
439	La Vega	C	160
457	Palomas	C[c]	640
		Total	275,676[a]

Notes: [a] Includes allotment acres that are outside the Planning Area.

[b] Combined allotment created in 1995 to include the former Cerro Chato (#200).

[c] Allotments created by the BLM as the result of a land exchange with the State of New Mexico in 1987.

changes the number of AUMs permitted only on the I allotments. However, the agency also adjusts use on the M and C allotments in response to changes in resource demands and conditions.

AUM changes can be implemented either through documented mutual agreement with the affected allottee (including an AMP/CRMP) or by grazing decision. These changes are implemented after consultation with the affected permittee or lessee, the state, and the interested public.

Livestock Grazing in Wilderness. In the NCA wildernesses, P.L. 100-225 allows previously established livestock grazing to continue as long as the intent of the Congress regarding grazing in such areas is implemented (as expressed in the Wilderness Act and the Forest System Wilderness Act). Department of the Interior Wilderness Management Policy allows motorized and mechanized equipment to be used to maintain range improvements in wilderness. The BLM has developed Range Improvement Management (RIM) Plans for the West Malpais and Cebolla Wildernesses; the plans provide guidance and procedures for using such equipment, and the BLM will continue to follow them. Allottees may use motorized vehicles on already existing routes to access windmills for annual maintenance, fences every 5 years, and dirt tanks every 10 years. (The plans are on file at the Albuquerque Field Office.)

Monitoring

The BLM and allottees modify livestock grazing practices based on the results of systematic vegetative monitoring studies. These studies are done on all allotments, with the intensity and frequency based on allotment category. C allotments are field checked before permit/lease renewal or transfer. For the M allotments, vegetative trend data is collected and reviewed before permit renewal. Trend and forage utilization studies are done and evaluated every 5 years on the I allotments. If evaluations indicate the need, the BLM implements changes in livestock grazing management through agreements with allottees or management decisions. An allotment's selective management category is changed based on new resource information.

The BLM will continue to do on-the-ground monitoring studies. To enhance these monitoring methods and increase the success of vegetative management practices, the BLM will also consider using satellite data and Geographic Information Systems (computer) analysis. Based on the comparison and evaluation of these data, the agency will continue to make adjustments in grazing use (including reduced livestock numbers). The BLM will also evaluate the data to determine the effectiveness of livestock grazing management in accomplishing the vegetation objectives. Vegetative treatments will be applied in specific areas where they are likely to succeed to encourage the formation of PNCs.

Riparian & Wetland Habitats

Program Goal

The goal of this program is to manage the riparian and wetland habitats in the Planning Area for their protection and enhancement. BLM policy is to achieve a healthy and productive ecological condition for all public riparian areas (USDI, BLM 1991).

Riparian/wetland areas are those lands directly influenced by permanent water. Within the Planning Area, two springs are known to have riparian/wetland areas (refer to Chapter 3 for more information).

Management Common to All Alternatives

The BLM will take all appropriate actions (e.g., fencing, using grazing management practices) to protect these riparian/wetland habitats in the Planning Area. Construction activities that remove or destroy riparian vegetation will be avoided.

The agency will access the condition of the two Planning Area springs. All springs and associated riparian/wetland habitats on BLM-administered lands that are presently in the Properly Functioning Condition category will be maintained at that level (USDI, BLM 1993, 1994). All springs and associated riparian/wetland habitats that are presently in the Nonfunctional or Functional--At Risk categories will be managed to improve them to properly functioning condition. The maintenance or improvement of these springs and associated riparian/wetland habitat could be accomplished either by using exclosures or by implementing grazing management practices that would allow these areas to continue to be maintained at or improved to properly functioning condition.

In managing livestock grazing, the BLM will design and establish practices that meet riparian and water quality needs. No livestock-related activities such as salting, feeding, construction of holding facilities, or stock driveways will be allowed to occur within the riparian zones.

Throughout the Planning Area, the BLM will continue to coordinate riparian/wetland habitat management with other programs and activities, including rangeland resources, wildlife, watershed, recreation and lands. Riparian habitat values will be addressed for all surface- and vegetation-disturbing actions.

Monitoring

The BLM will monitor riparian/wetland habitats using the process for assessing proper functioning condition for lentic systems (standing water habitats such as lakes, ponds, seeps and meadows) and lotic systems (running water habitats such as rivers, streams and springs; USDI, BLM 1993, 1994).

Fire Management

Program Goal

The goal of the fire management program is to protect visitors, other land users, wildlife, livestock, and special physical resource features of the Planning Area. Prescribed fires and wildland fires under prescription will be used by other resource programs (e.g., wildlife, range, watershed) to improve the vegetative resources and help achieve vegetative objectives; protect, improve, or enhance wildlife and livestock habitats and watershed values; reduce the fuel load; and blend fire back into the natural process of a functioning ecosystem.

Fire has played an integral role in the Planning Area, which is made up of numerous plant communities that have developed as part of a fire-dependent ecosystem. Periodic burning of these communities is necessary to perpetuate their natural composition, structure and function.

Individual burn plans with appropriate prescriptions are required before prescribed or wildland fires are used to improve the vegetative habitats of the Planning Area. In addition to an individual burn plan, a state burn permit that includes a smoke management plan is also required.

BLM policy requires the development of a Fire Management Plan for the Planning Area, which is anticipated to be completed after this El Malpais Plan is approved. This fire plan will identify management objectives to protect, maintain, and/or enhance resource values using fire. It will also establish restrictions for actions that could cause unacceptable resource damage (e.g., bulldozers in riparian areas).

In developing the Fire Management Plan for the Planning Area, the BLM will work closely with the NPS. This will allow the integration of objectives and restrictions for the Planning Area and the National Monument.

Management Common to All Alternatives

To protect land users, property and other resource values, the BLM will take appropriate action for all wildfires on or threatening public lands. Such action can range from full suppression to allowing a fire to burn as a wildland fire where it is in compliance with appropriate prescriptions.

Under any alternative, the primary use of fire by other resource programs will be to maintain and improve wildlife habitats, vegetative communities, and watershed values through a prescribed burning program. In this way, the BLM can help restore the natural place of fire in a functioning ecosystem, the Planning Area.

The BLM will evaluate and approve all burn plans through an EA process, paying close attention to cultural resource values (e.g., homesteads, hogans), wilderness values, visual resources, and recreational values within the area. Appropriate cultural clearances, T&E evaluations, and other environmental documentation will be required before any prescribed fire is initiated.

Within wilderness, wildland fires under prescription will be used to the greatest extent possible. Except for fuel management to reduce the risk of catastrophic fires, prescribe fires will generally not be used within wilderness. When suppression of wildfires within wilderness is necessary, the "minimum tool" philosophy will be used.

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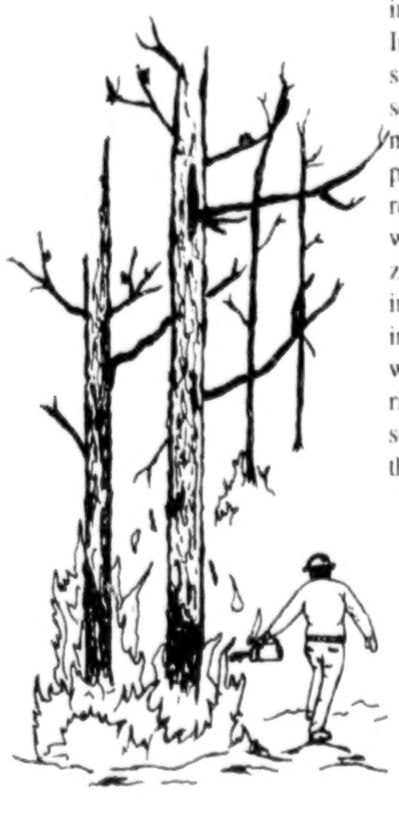
In the Fire Management Plan, the BLM will divide the Planning Area into fire suppression zones. For each zone, the BLM will identify general management practices to allow fire to become part of the natural process, while still protecting other resources values. (The initial suppression zones for the Planning Area are identified on Map 5 in the map section following this chapter.) During preparation of the Fire Management Plan and subsequent updates, the agency may modify these zones to incorporate new information (e.g., new resources at risk), changes in vegetative prescriptions, or additional information from adjacent landowners (e.g., NPS, private individuals, Indian tribes).

Full Suppression

Full suppression will be used in all parts of the Planning Area where no burn plan has been approved, fire prescriptions in approved burn plans are not being met, or smoke management plans are not being met. Because of their proximity to private lands, structures, recreational use areas or critical wildlife habitats, certain areas have been identified as full suppression zones (refer to Map 5). To prevent unacceptable resource damage and/or loss of life and property, fires will generally not be allowed to burn in these zones. In some circumstances, prescribed fires may be used to protect the resource values within these zones by reducing fuel loading. Such fires will reduce the risk of catastrophic fires in the future.



In addition to these larger, full-suppression zones, smaller locations that are widely scattered over the Planning Area and contain facilities, homesteads, historical structures or private lands will receive full fire suppression. The Spur Unit, Neck Unit, Cerritos de Jaspe Unit, and Cebolla Wilderness (along NM 117) contain the majority of such locations.

Prescribed Fire

Prescribed fires will be used throughout the Planning Area where appropriate (outside of wilderness and full suppression zones) to protect, improve, or enhance wildlife/livestock habitats and watershed values. The BLM will use such fires to maintain or restore desired vegetation. In addition, the agency will use these fires to reduce fuel loading and the risk of large fires in areas where high-value resources exist (e.g., houses, land improvements).

Area burn plans will be developed on a case-by-case basis, with each taking into account the desired outcomes (vegetative response and/or fuel reduction). In each plan, the BLM will also outline the appropriate conditions (e.g., temperature, relative humidity, wind speed, soil moisture, flame height) under which fire will accomplish those vegetative outcomes.

Within wilderness and full-suppression zones, the BLM will only use prescribed fires to reduce fuel loading and the threat of large, catastrophic fires. Burn plans will be developed on a case-by-case basis as described above.

A prescribed fire is begun only when the conditions outlined in the burn plan are met. These include not only the conditions for the desired vegetative response, but also the necessary resources (staff, engines, aircraft) to ignite and control the prescribed burn.

Areas within the Chain of Craters, Continental Divide, Breaks, Cerro Brillante and Brazo Units will be identified for prescribed fires to maintain and enhance wildlife/livestock habitat and watershed values. Other units (Cerritos de Jaspe, Neck, Spur, West Malpais Wilderness, portions of Cebolla Wilderness) will be identified for prescribed fires only to reduce the threat of catastrophic wildfire in wilderness and other locations in which full suppression is generally required.

Wildland Fire (Under Prescription)

Wildland fires are those that meet the conditions outlined in a prescribed burn plan, but begin naturally and are monitored to make sure they remain within prescription. Such fires usually are located in areas with natural fuel breaks (e.g. lava flows, roads) to control the fire perimeter, and where limited resources are at risk.

Areas within the West Malpais Wilderness and the Continental Divide Unit are identified on Map 5 for wildland fires under prescription.

Lands & Realty

Program Goals

The goals of this program are to continue to acquire land and easements within the Planning Area, to protect the resources for which the NCA was established, and to ensure that any rights-of-way or land use permits issued are consistent with Planning Area management goals for other resource programs and uses.

Management Common to All Alternatives

None of the public lands within the NCA are subject to disposal, as P.L. 100-225 withdraws the area from all public land laws. The *Land Protection Plan, El Malpais National Conservation Area* (USDI, BLM 1989) provides the basic framework for acquiring lands and mineral interests within the NCA. Rights-of-way and land use permit applications are authorized on a case-by-case basis, with mitigation measures to protect the resources and values for which the NCA was established.

Major new rights-of-way will be discouraged, and use of existing rights-of-way (including joint use whenever possible) will be promoted. When expansions or realignments are proposed, the BLM will work closely with the rights-of-way holders, especially state and county transportation departments and utilities, to develop appropriate mitigation. Such measures will be designed to protect the scenic quality, natural and cultural values of the Planning Area, and to ensure visitor safety.

When new construction is needed, the BLM will identify the least damaging routes and locations, working closely with private landowners in areas of mixed ownership. New construction for roads, pipelines, powerlines and communication sites will be authorized only if no alternatives exist, and if mitigation measures can ensure protection of the scenic quality, natural and cultural values of the Planning Area. The BLM will conduct compliance inspections on all rights-of-way and land use permits.

The BLM will inform any proponents of major rights-of-way adjacent to the Planning Area of the legislative requirements to protect its scenic quality, cultural and natural resources. The agency will also oppose major rights-of-way proposals on lands adjacent to the Planning Area if they would adversely impact the area's viewshed. In these situations, the BLM will work with proponents to find alternative routes and develop appropriate mitigation.

Geology, Minerals & Paleontology

Program Goal

Protecting important, environmentally sensitive geologic and paleontologic resources while allowing for scientific collection and research, recreation and hobby collecting, and educational and interpretive activities is the major goal of this program.

Management Common to All Alternatives

To protect the resources for which the NCA was established, the BLM will authorize no mineral development on public lands within the area. P.L. 100-225 withdraws public lands in the NCA from the mining, mineral leasing and geothermal leasing laws.

The agency will continue to acquire mineral interests for public lands in the NCA, as identified in the Land Protection Plan. Approximately 40,000 acres of privately owned mineral interests exist in the NCA. As private lands are acquired within the NCA, mineral rights will also be acquired. P.L. 100-225 provides for the automatic withdrawal of all new acquisitions within the NCA from mineral entry and leasing. This plan recommends that any new federal lands added to the NCA as the result of boundary adjustments also be withdrawn.

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In areas where potentially important geologic values or fossils may be involved, the BLM will evaluate all permit applications for scientific study and develop appropriate stipulations for resource protection. The agency will also enter into agreements with appropriate institutions to conduct research on La Rendija (Maxwell's Fault) and other areas of geologic and paleontologic interest.

The BLM will develop appropriate interpretive materials to explain the significance of the special geologic features of the Planning Area, such as the Chain of Craters, the cliffs at The Narrows, La Ventana Natural Arch, Cerro Rendija, Hole-in-the-Wall and Cerritos de Jaspe. The agency will conduct compliance inspections on all activities involving valuable geologic and paleontologic resources.

Soil, Water, & Air Resources

Program Goals

The goals of this program are to protect, maintain, and enhance the soil, water and air resources of the Planning Area for the benefit of humans, wildlife and livestock. The program will continue to support other resource activities in the Planning Area.

Management Common to All Alternatives

The BLM will continue to participate with the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) in the National Cooperative Soil Survey. Detailed soil surveys for individual projects will be conducted as needed. Areas in which soils are sensitive and susceptible to high erosion will be monitored.

Allottees will be encouraged to enter into cooperative agreements with the NRCS to develop erosion control plans on private land within the Planning Area. As needed, the BLM will develop watershed activity plans as a part of grazing AMPs/CRMPs for the Planning Area. Through implementing AMPs/CRMPs, the BLM will work to increase vegetative cover to reduce erosion.

The BLM will monitor and maintain water quality at the Ranger Station and any other developed drinking water sites in accordance with state standards. Water quality at natural springs on public lands in the Planning Area will also be monitored.

Soil, water and air resources will be considered when the BLM initiates or authorizes projects. As needed, BLM conservation practices and the State of New Mexico's best management practices will be applied to surface-disturbing activities.

To obtain valid water rights on public lands in the Planning Area, the BLM will file for them with the New Mexico State Engineer's Office.

Water wells and watershed projects that are no longer functioning or serving their original purpose will be reclaimed and abandoned as appropriate.

The Planning Area will continue to serve as a designated data collection site for the Intermountain Wilderness Area Ecosystem Study, a research project on global change.

PLANNED ACTIONS FOR EACH ALTERNATIVE

Four alternatives are identified in this section, with their impacts analyzed in Chapter 4: A--Continuation of Existing Management (No Action), B--Resource Use (emphasizing human activities), C--Natural Processes, and D--Balanced Management or the Preferred Alternative (seeks an optimal, balanced mixture of management prescriptions).

In response to the planning issues, these alternatives have been developed as a range of reasonable combinations of resource uses and management practices. In combination with the continuing management guidance and actions (discussed above), the alternatives provide management direction for all resources and uses. They also provide a distinct choice of potential management strategies. Each alternative conforms to FLPMA and is consistent with P.L. 100-225.

Alternative A--No Action (Existing Management)

This alternative represents a continuation of the management practices defined in the *Rio Puerco Resource Management Plan*, with minimal modifications needed to meet the requirements of P.L. 100-

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225. It provides a baseline for comparison with other alternatives and may not adequately resolve the issues identified in this plan. The management direction for this alternative is derived from existing management decisions and guidance, as discussed above under "Continuing Management Guidance."

Issue 1--Recreation

Under this alternative the emphasis for recreation would be on dispersed recreational opportunities, with some site-specific opportunities offered. Most available activities would be related to roads and motorized uses (except in designated wilderness) as identified through the ROS classification system. (Refer to Table 2-6 and Map 6 for display of ROS Classes in the Planning Area under this alternative, and to Appendix C for a description of the ROS System.) Only small or subtle modifications would be made in the Planning Area to facilitate and direct recreational use, except at the Ranger Station and La Ventana Natural Arch.

The BLM would provide opportunities to participate in such activities as camping, hiking, horseback riding, hunting, mountain biking, picnicking, sightseeing, backcountry driving, wildlife watching, and exploring and learning about historical and archaeological sites. Opportunities to participate in recreational activities of interest to smaller populations, such as caving, climbing, skiing, shooting, trapping, photography, pack trips, enjoying wilderness solitude, and road biking would continue to be offered. Wilderness designation, wildlife habitat protection, and off-highway vehicle (OHV) designations would limit the opportunity to participate in some activities at some locations within the Planning Area. Those users seeking to recreate without motorized vehicles and equipment would be directed to the 100,800 acres of wilderness within the Planning Area.

Recreational activities associated with caving would be dependent on the significance of the cave. Within the Planning Area, caves would be managed in accordance with the Federal Cave Resources Protection Act and related BLM policy. Recreational use that would adversely affect significant cave resources would be deferred or denied. Information about the location of significant caves would not normally be made available to the general public, and use of these caves would be regulated.

Recreational facilities and actions already completed or approved would continue to be managed for their intended use. This includes the Ranger Station on NM 117 with its nature trail; a parking lot, toilets, and a trail at La Ventana Natural Arch; and the CDNST and two trailheads (refer to Map 10).

Camping would remain primarily a dispersed activity throughout the Planning Area. One semi-developed site at The Narrows would provide facilities for campers and picnickers. This site contains four units with portable toilets and tables for single-family use. Overnight backpacking would be encouraged elsewhere to disperse camping activities and impacts. Camping would remain prohibited at La Ventana Natural Arch.

Use of the existing Narrows Rim Trail, CDNST, La Ventana Natural Arch Trail, Hole-in-the-Wall Trail, and Ranger Station Nature Trail (approved but not yet built) would provide opportunities for hiking and other trail-related recreational activities under this alternative. Visitors could also hike cross-country to unique and important cultural and natural resources in the Planning Area, including the Dittert Site and homesteads in Armijo Canyon; the Rowe Homestead, at the mouth of Cebolla Canyon; the Stone House, located farther into this canyon; La Rendija, a large crack in an old basalt flow; Hole-in-the-Wall, a kipuka (island of older vegetated basalt flows surrounded by more recent flows); and the cinder cones in the Chain of Craters (refer to Table 2-7).

Hiking through the Chain of Craters would be encouraged along the CDNST, with other opportunities along existing and closed vehicle routes for users not interested in cross-country travel. Visitors would be encouraged to practice a Leave No Trace backcountry ethic.

The Hole-in-the-Wall portion of the West Malpais Wilderness would be promoted for its rugged terrain. Access can be gained by hiking or backpacking along an authorized vehicle route (for maintenance of existing range improvements) that is about 7 miles long and cuts through the lava flows.

To enable more convenient horseback access and use of the Cebolla and West Malpais Wildernesses, the BLM would maintain the wilderness boundary entrances at The Narrows and Hole-in-the-Wall.

TABLE 2-6

RECREATION OPPORTUNITY SPECTRUM CLASSIFICATIONS FOR THE PLANNING AREA (PA), BY ALTERNATIVE[a]

(acres, rounded to nearest hundred)

	Alternative A		**Alternative B**		**Alternative C**		**Alternative D**	
ROS Class	**Acres**	**% PA**	**Acres**	**% PA**	**Acres**	**% PA**	**Acres**	**% PA**
Roaded natural	79,200	28	79,200	28	72,700	25	79,000	28
Semi-primitive motorized	85,000	30	82,200	29	56,900	20	72,000	25
Semi-primitive nonmotorized	122,100	42	124,900	43	156,700	55	135,300	47
Totals	286,300	100	286,300	100	286,300	100	286,300	100

TABLE 2-7

UNDEVELOPED (NON-TRAIL) HIKING OPPORTUNITIES EMPHASIZED UNDER EACH ALTERNATIVE

	Alternative				
Map ID Number[a]	**A**	**B**	**C**	**D**	**Area/Destination**
H-1	•		•	•	Rowe Homestead
H-2	•		•		Stone House
H-3	•				Armijo Canyon Homestead & Springhouse, Dittert Site, Cebolla Wilderness
H-4	•		•		Hole-in-the Wall, West Malpais Wilderness
H-5	•	•	•	•	La Rendija
H-6	•	•	•	•	Chain of Craters, Worley Homestead
H-7			•		Narrows Rim, Cebolla Wilderness
Total Number of Identified Opportunities	6	2	6	3	

Note: [a] Refer to Maps 10 through 13 for the location of these opportunities.

Numerous other areas also provide opportunities for horseback riding, as shown on Map 10.

Hunting opportunities would remain the same as at present; hunting and trapping are permitted in the Planning Area in compliance with NMDG&F regulations. Licensed hunters must not drive off established roads except to retrieve legally taken big game where permitted under the motorized vehicle area designations within the Planning Area. The density of roads in the Planning Area provides good hunting access but limits solitude and isolation.

Mountain bike opportunities would continue to exist along NCA and Planning Area travel routes open to the public. Brochures and other informational material on mountain bike routes would be made available when the requests became more frequent or the need for resource protection increased.

The BLM would continue to provide picnicking opportunities at facilities at the southern end of The Narrows and throughout the Planning Area. This would be a dispersed activity not dependent on facilities.

Approximately 354.5 miles of BLM-administered roads would be available for sightseeing, driving for pleasure, or back-country driving. The Chain of Craters Back Country Byway would provide excellent opportunities for back-country driving, sightseeing and wildlife viewing in the western portion of the Planning Area.

Sightseeing for cultural interest would be offered at the Dittert Site, the Ranger Station Reservoir, and through guided hikes to the Aldridge Petroglyphs. Sightseeing for historical interest would be offered at one or more of six fenced or stabilized homesteads sites (Armijo Canyon Springhouse, Armijo Canyon Homestead, Stone House (two sites), Rowe Homestead, and Worley Homestead).

Under Alternative A, no specific areas or stretches of road would be identified, signed or developed for watching wildlife. However, the BLM would provide information on wildlife viewing through brochures, other publications at the Ranger Station, and personal contact by staff members.

The BLM would continue to issue Special Recreation Permits to qualified applicants for commercial, competitive, and organized uses of public lands on an as-requested basis. The permit process includes an EA and determination of conformance with the management decisions for the area in which the proposed use is planned. When issued, permits would include stipulations for resource protection and reduced user conflicts.

The emphasis for interpretation under Alternative A would be on dispersed and wildland recreation. BLM staff would work with the local Chamber of Commerce and federal agencies to achieve this emphasis.

During the summer months or as time permitted, the BLM would conduct evening programs at the Ranger Station parking lot or local private campgrounds as available. At least eight programs would be offered each year. At the Dittert Site, selected homesteads and petroglyph panels, the BLM would continue to conduct guided hikes for groups requesting them.

Visual Resource Management

The VRM System would continue to be the basic tool for managing visual resources on public lands in the Planning Area. Under Alternative A, emphasis would be placed on managing the visual resources under the VRM classes assigned through the RMP (refer to Table 2-8 and Map 14) and BLM policy.

The management of visual resources on acquired lands outside the NCA but within the Planning Area would be handled on a case-by-case basis, because these lands were not included in the RMP and VRM classes have not been assigned. Lands with new projects would be assigned an interim VRM Class to conform with the land-use allocations and scenic quality of the surrounding area, using procedures identified in BLM Manual H-8410-1. Those acquired lands in the NCA and surrounded by lands with RMP-assigned VRM classes would be managed according to the appropriate class objectives. These classes and objectives would remain in effect until VRM objectives were assigned through this plan.

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TABLE 2-8

VRM CLASSES ASSIGNED TO PUBLIC LAND IN THE PLANNING AREA (PA), BY ALTERNATIVE [a]

VRM Class	Alternative A		Alternative B		Alternative C		Alternative D	
	Acres	%of PA	Acres	%of PA	Acres	%of PA	Acres	% of PA
I	125,130	50	104,450	42	128,440	52	104,730	42
II	86,760	35	129,440	52	119,500	48	143,210	58
III	14,110	6	14,110	6	60	<1	60	<1
Unclassified	22,000	9	0	0	0	0	0	0
Totals	248,000	100	248,000	100	248,000	100	248,000	100

Note: [a] No VRM Class IV areas exist in the Planning Area.

The Cebolla and West Malpais Wildernesses, containing approximately 100,800 acres of public land, would be managed under VRM Class I objectives. As shown on Map 14, most of the Cerritos de Jaspe, some of the northeast corner of the Continental Divide, the northeast corner of the Cerro Brillante, and the southern portion of the Neck Unit (another 24,330 acres of public land) would also be managed under VRM Class I objectives. Any new projects and management activities would be done in a way that would preserve the existing character of the landscape. Any visual contrast from the form, line, color or texture of the existing landscape that was created by new activities should be very low and not attract attention. To comply with Class I objectives, the projects would have to harmonize with and compliment the natural environment.

In the remainder of the Planning Area, the BLM would develop projects and management actions would be developed within the established VRM Class II or III objectives. Class III lands (approximately 14,110 acres) are located mostly in the southwest corner of the Planning Area and the north half of the Neck Unit. The other 86,760 acres within the Planning Area would be managed as VRM Class II.

The objective for Class II lands is to retain the existing character of the landscape but in a slightly less restrictive manner than for Class I. Changes in the landscape character from activities should be low; the activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form line, color and texture found in the predominant natural features of the characteristic landscape.

On Class III lands, a moderate level of change to the characteristic landscape would be allowed through landscape alteration by manipulation of the vegetation or soils, or the introduction of structures. Here management activities may attract attention but should not dominate the view of the casual observer. Visual changes on Class III public lands should repeat the basic elements of form, line, color and texture common to the predominant natural features of the characteristic landscape so they remain secondary to the natural surrounding.

The Ranger Station on New Mexico (NM) 117 was constructed to comply with the requirements of P.L. 100-225, harmonizing with the surrounding landscape but attractive to the public. It was built on lands acquired after the passage of P.L. 100-225 and the completion of the RMP.

Issue 2--Facility Development

Under Alternative A, the emphasis for recreation would be on dispersed opportunities. Therefore, only limited facility development beyond what already exists in the Planning Area would be undertaken (refer to Map 10). Existing facilities would be altered if needed to make them universally accessible, with any new facilities built to this standard. Monitoring would continue at selected locations; if it showed that resource damage caused by recreation and visitor use exceeded established limits of acceptable change (LAC), the BLM would develop additional facilities and/or take other appropriate actions. (Appendix D provides an overview of the LAC system and Monitoring Plan for the NCA, as revised in 1995.)

Camping would continue to be encouraged at the southern end of The Narrows. Existing facilities there (for picnicking, camping, and parking) would remain as they are now, with the addition of one portable toilet (for a total of two). The BLM would construct no other developments for picnicking or camping in the Planning Area.

The road providing access to the southern end of The Narrows would be improved to an all-weather, gravel surface. Vehicle access through the northern end of the site would be closed for safety reasons.

The two existing, paved parking lots on the east side of the Planning Area would be maintained; from them, people could continue to disperse to recreate. The lot at La Ventana Natural Arch has a capacity for 32 cars and 3 recreational vehicles or buses. At the Ranger Station, the lot has a capacity for 30 cars and 5 recreational vehicles or buses.

The horse access gates at the south end of The Narrows and into Hole-in-the-Wall would remain. No additional facilities would be planned for horseback riding opportunities at either location or elsewhere in the Planning Area.

Five established trails approximately 36.5 miles long, with five trailheads, would exist in the Planning Area. These trails would consist of the La Ventana Natural Arch Trail, the approved CDNST crossing the west side of the Planning Area (with two trail heads to be installed), the Ranger Station Nature Trail, and two informal trails (at Hole-in-the-Wall and the Narrows Rim--refer to Table 2-9 for a listing of trailheads under each alternative). No additional trails or trailheads would be developed.

(Note: Informal trails have little or no tread development, a limited number of trail markers, and the lowest priority for maintenance. They become established along travel routes for other motorized and nonmotorized uses. Typically they are not in an appropriate location for resource protection.)

When built, the Nature Trail (approved in 1989) would extend from the Ranger Station to form a loop about ½ mile long. This trail would pass the Ranger Station Reservoir and highlight scenic views, local flora and fauna.

Providing access to La Ventana Natural Arch is a constructed trail approximately ½ mile long. This trail, which leads from the parking lot, crosses the Cebolla Wilderness to the base of the arch. The first part of the trail (to a photographic viewpoint just outside the wilderness boundary) is paved to accommodate universal access.

The 3.5-mile-long, informal Narrows Rim Trail, which has been marked with rock cairns, would be available for hiking, backpacking and access to the Cebolla Wilderness. Visitors could continue to park at The Narrows, and the BLM would continue to maintain the trailhead signs. No new actions would be planned for this trail.

West Malpais Wilderness visitors would be able to continue using the informal Hole-in-the-Wall Trail (approximately 7 miles one way from where it enters the wilderness). The horse access gate near the wilderness entrance would be maintained, but no new developments would be planned for this trail.

The BLM and other agencies are developing a treadway for users and resource protection along approximately 25 miles of the CDNST that crosses public land in the Planning Area (refer to Map 10). The treadway will follow the selected route established in the CDNST plan (USDA, FS 1993). This CDNST plan also identifies the need to construct

TABLE 2-9

TRAILHEADS IN THE PLANNING AREA UNDER EACH ALTERNATIVE

Map ID No. [a]	Name	Alternative				Trail Use or Destination Served
		A	B	C	D	
Existing/Approved						
T-1	Ranger Station	•	•	•	•	Ranger Station Reservoir, Nature Trail
T-2	La Ventana Natural Arch	•	•	•	•	La Ventana Nat'l Arch & Cebolla Wilderness
T-3	The Narrows	•	•		•	Cebolla Wilderness, Narrows Rim Trail
T-4	Cerro Brillante	•	•		•	CDNST, West Malpais Wilderness, La Rendija, West Malpais Schoolhouse, Chain of Craters
T-5	Cerro Americano	•	•		•	CDNST, mountain bike use
Proposed						
T-6	Aldridge Petroglyphs		•			Prehistoric site in Cebolla Wilderness
T-7	Armijo Canyon/Dittert Sites		•		•	Cultural & historical sites in Cebolla Wilderness
T-8	Brazo (2 trailheads) [b]		•		•	Mountain bike use
T-9	Cebolla Canyon Community		•			Cultural sites, (Arroyo Ruin, The Citadel, Oak Tree Ruin, Rowe Homestead
T-10	Cebolla Canyon Schoolhouse		•		•	Historical schoolhouse in Cebolla Wilderness
T-11	Cerritos de Jaspe [b]		•			Mountain bike use
T-12	Hole-in-the-Wall		•		•	Old volcanic flows surrounded by newer ones, West Malpais Wilderness
T-13	Lobo Canyon		•		•	Prehistoric petroglyphs in Cebolla Wilderness
T-14	Pinole Site		•			Cultural site in Cebolla Wilderness
T-15	Spur Campground		•		•	Loop trail past amphitheater
T-16	Stone House		•			Cultural site in Cebolla Wilderness
	Total No. Under Each Alternative	5	16	2	11	

Note: [a] Refer to Maps 10 through 13 for the location of these trailheads.

[b] These trailhead locations are not yet pinpointed; they would only be developed if use showed the need.

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trailheads, two of which would be located in the Planning Area (at Cerro Americano and Cerro Brillante). Each trailhead, with a graded parking area for up to 10 vehicles, would serve as a staging area for CDNST users. As needed, informational and regulatory signing would also be installed at these locations. (Refer to Table 2-9 for a listing of the trailheads that would exist under each alternative.)

No trails for mountain bike users would be marked until established Limits of Acceptable Change (LAC) for bike social trails in particular locations were exceeded. This would trigger the need to inform visitors about riding opportunities on existing travel routes, marking these routes, and educating riders about resource protection. Opportunities for mountain biking on existing travel routes in the Chain of Craters, Cerritos de Jaspe, and/or Brazo Units would be promoted when LAC standards were exceeded.

The BLM would build no new facilities to enhance sightseeing, driving for pleasure, or back-country driving. The Chain of Craters Back Country Byway would be maintained and developed through coordination with Cibola County and the NPS. Within the Planning Area, the BLM would install and maintain up to four back-country byway signs and up to four kiosks. (Such signs typically measure 3 feet high by 5 feet wide and stand 6 feet tall with support posts; refer to Figure 2-a. A typical kiosk is shown in Figure 2-b with a pullout in Figure 2-c.)

To gather information about visitation, the BLM would install visitor registration boxes at up to four selected homesteads. These sites have access gates for visitors who have hiked in.

To capture information from visitors hiking into the Cebolla Wilderness to the Dittert Site, the BLM would install another registration box at the informal parking area in Armijo Canyon (at the end of the public road near the wilderness boundary). Signing of the site to protect archeological resources would continue, and visitors would be informed of how to reach the site and the current road condition. No additional site developments would be planned.

No recreational facilities would be developed or constructed for viewing wildlife. The entire NCA is considered to be a "Watchable Wildlife" viewing area.

Entry signs would be maintained at nine locations (refer to Map 10), with additional signs posted as indicated by public comment or to eliminate confusion. (The dimensions of these signs are discussed above.)

No design standards for visual resources management would be used to maintain a consistent appearance for constructed facilities in the Planning Area.

If Alternative A was selected, limited interpretive facilities would be developed at recreation access points, picnic areas and trailheads. Most if not all interpretation would occur through one-on-one contact with visitors (including public programs and guided hikes); exhibits, interpretive media and publications at the Ranger Station; wayside exhibit panels and existing signs.

Issue 3--Access & Transportation

On 147,200 acres of public land (59 percent of the public land acres in the Planning Area), motor vehicle use would be allowed on existing inventoried routes (i.e., arterial, collector, and local travel routes, as shown on Map 18 and defined in the Glossary). About 41 percent of the public lands in the Planning Area would be closed to motorized vehicles and mechanical forms of transportation (except as authorized), mainly because of wilderness designation (refer to Table 2-10 and Map 22). Vehicle use in the 18,300-acre Chain of Craters WSA would be limited to existing inventoried routes.

On 3,600 acres of public land designated as open and 8,400 undesignated acres, users could travel by motor vehicle off routes and trails. This cross-country travel would be permitted unless monitoring showed that emergency closures or limitations were needed because of resource conditions, safety concerns, or user conflicts.

Except in designated wilderness and some scattered parcels of public land in the Neck Unit, access for recreational activities and other uses could occur on 354.5 miles of inventoried, BLM-administered

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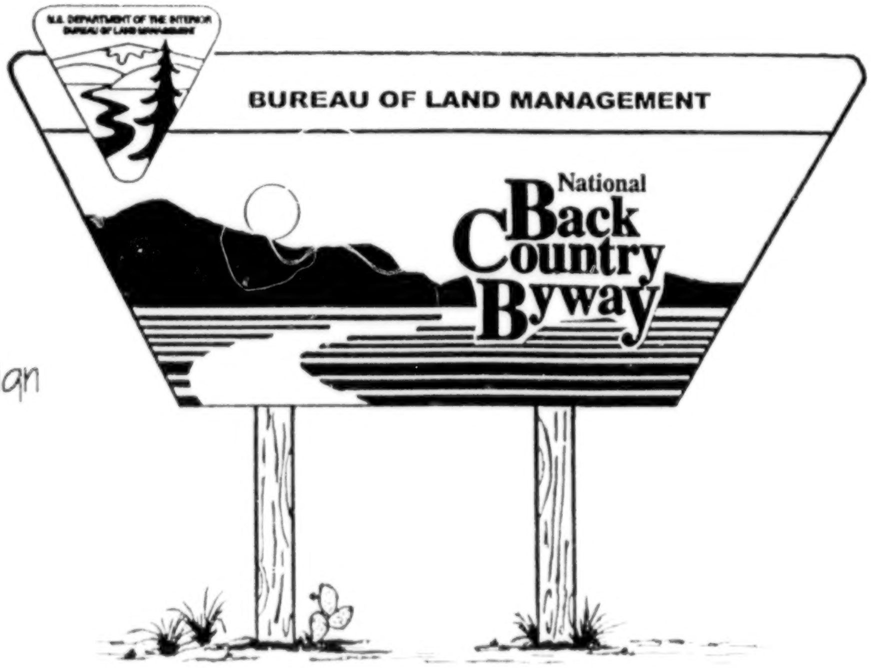
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BUREAU OF LAND MANAGEMENT
National
Back
Country
Byway

Figure 2- a
Back Country Byway Sign

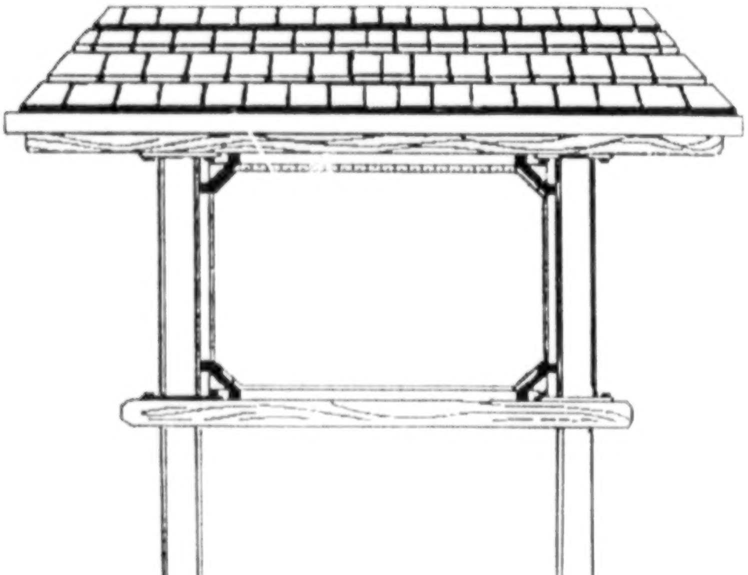

Figure 2- b
Typical Kiosk

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

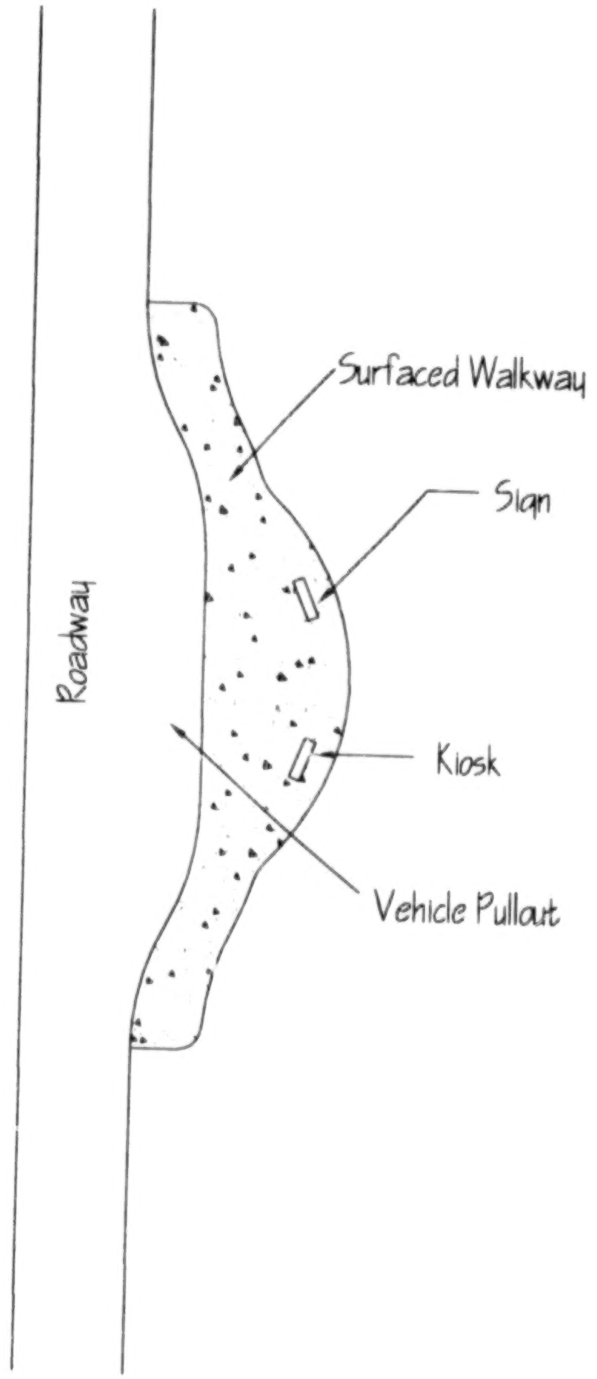

Figure 2-c
Typical Pullout for Sign and Kiosk

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

arterial, collector and local vehicular routes scattered throughout 147,200 acres of the Planning Area (refer to Table 2-11, and to the Glossary for definitions). The BLM would maintain these routes on an as-needed or emergency basis. An additional 6.3 miles of routes outside wilderness are identified through agreements with the users for authorized use only.

(Note: Approximately 76 miles of state highways and county, U.S. Forest Service and private roads exist within the boundaries of the Planning Area. They would remain unaffected by management under this alternative, and are not included in Table 2-11.)

Existing facilities installed in association with this vehicle transportation network would remain in place (e.g., parking areas, trailheads, wayside exhibits and signs), including those for interpreted cultural, historical and geologic features. Signs, maps, and brochures informing the public of access opportunities and restrictions would remain limited, although the BLM would continue to install and maintain signs needed to inform and direct use.

Cross-country access by nonmotorized means (e.g., horseback, mountain biking, hiking) would be allowed to continue in the Planning Area. However, it is assumed that most of this would be concentrated on existing or abandoned back-country roads and a few trails because of terrain and vegetation conditions. Mountain bikers would be prohibited from accessing the wildernesses but would be allowed to use the remaining Planning Area lands without restriction to specific trails or roads.

Motorized and mechanical forms of transport on portions of the Narrows Rim and La Ventana Natural Arch Trails within wilderness would be prohibited. As at present, American Indians would be able to use existing roads for religious and cultural practices.

Issue 4--Wilderness Management (Cebolla & West Malpais)

Management would continue as at present until this plan is approved. The BLM would continue to focus on signing, prevention of unauthorized vehicle intrusions, patrolling and monitoring of the areas, and public education.

The BLM and volunteers would continue to patrol the areas at least once a month when they were accessible to the public, and more frequently when conditions warranted. Patrolling would be used to deter violations, gather information within the areas, and inform users about the resources and appropriate uses of designated wilderness.

The public would continue to use the areas for primitive types of recreation that do not require the use of motor vehicles, motorized equipment or other forms of mechanical transport such as mountain bikes. The BLM would continue to encourage recreational use of the areas through distributing maps and brochures identifying available opportunities. The existing facilities on the perimeter of the wildernesses, along with trail improvements, would remain in place for continued recreational use and resource protection.

La Ventana Natural Arch, The Narrows, and Armijo Canyon would continue to serve as access points to the Cebolla Wilderness. Cebolla Canyon Road (No. 2003), which splits the Cebolla Wilderness, and the Sand Canyon road (a dead-end, cherry-stemmed road) also would provide access. From The Narrows recreation site, the Narrows Rim Trail extends 3.5 miles into the Cebolla Wilderness.

For the West Malpais Wilderness, the trailhead at the end of the cherry-stemmed road off County Road (CR) 42 would continue to serve as the primary access point. A trail following a vehicle route that leads into Hole-in-the-Wall, a major attraction of this wilderness, would continue to be identified for access to the area.

Except at La Ventana Natural Arch, where permanent restroom facilities and a paved parking lot are provided, facilities at trailheads and other entry points would remain rustic in nature. Onsite information would remain limited. Through interpretation and signing, the BLM would identify the boundaries, the wilderness name, and some regulations governing use of the area. When users were encountered during patrols, BLM staff and volunteers would provide additional onsite information and education. Information about the areas, Leave No trace principles, and wilderness stewardship would also be available at

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TABLE 2-10

MOTOR VEHICLE AREA DESIGNATIONS IN THE PLANNING AREA (PA), BY ALTERNATIVE
(public land acres)

Area Status	Alternative A		Alternative B		Alternative C		Alternative D	
	Acres	% of PA	Acres	% of PA	Acres	% of PA	Acres	% of PA
Open	3,600	1	0	0	0	0	0	0
Closed	100,800	41	104,450	42	128,440	52	104,730	42
Limited	135,200	54	143,550	58	119,560	48	143,270	58
Undesignated	8,400	4	0	0	0	0	0	0
Totals	248,000	100	248,000	100	248,000	100	248,000	100

TABLE 2-11

STATUS OF BLM MOTOR VEHICLE ACCESS ROUTES UNDER EACH ALTERNATIVE

Route Status	Alternative A		Alternative B		Alternative C		Alternative D	
	Miles	% of Total	Miles	% of Total	Miles	% of Total	Miles	% of Total
Open	354.5	98	337.5	93	199.7	55	273.1	75
Closed	2	<1	19	5	133.1	37	83.4	23
Authorized [a]	6.3	2	6.3	2	30	8	6.3	2
Totals	362.8	100	362.8	100	362.8	100	362.8	100

Note: [a] These routes are authorized for use by BLM staff members and grazing permittees only; they are not open to the general public.

the Ranger Station on NM 117, the wayside interpretive panels at La Ventana Natural Arch, BLM offices in Grants and Albuquerque, and on guided hikes.

Motorized vehicle access and other forms of mechanical transport (except as authorized under the Wilderness Act and P.L. 100-225) would be allowed only for access to nonfederal inholdings and livestock grazing operations; use of 5.5 miles of routes in Cebolla and 17.8 miles in West Malpais Wilderness have been authorized through prior agreements. Access and use for livestock grazing would continue under the conditions set in the BLM RIM Plans (USDI, BLM 1990) and AMPs/CRMPs for individual allotments overlapping these two areas (refer to Map 23). Access to inholdings would continue over routes selected by the BLM to cause the least impact to the area's wilderness character, while serving the purposes for which the land was held or used.

Traditional American Indian cultural practices would be allowed to continue in the two areas in a manner consistent with the intent of the Wilderness Act. Motor vehicle access to the perimeter of each wilderness would be allowed, but such use inside the wilderness would be prohibited, unless the BLM has granted prior authorization after consultation and evaluation. When the BLM authorized such use of motorized vehicles by American Indians, stipulations to control impairment of wilderness character would be met. Upon request, the BLM would temporarily close the smallest practicable area for the minimum period needed to accommodate American Indian activities.

In most instances, cultural and historical resources would be subject to the same forces of nature as other wilderness resources. However, stabilization and scientific studies of selected sites within the two wildernesses would continue as required to meet protection and preservation mandates. Research would be authorized if it could be carried out in an unobtrusive manner by methods compatible with preservation of the area's wilderness character. Except for guided trips, visitor information and education programs about selected cultural and historical sites within the wildernesses would be located outside the wilderness boundary.

Wildlife habitat management would continue to be guided by the BLM's Wilderness Management Policy (BLM Manual 8560). Hunting and trapping would be permitted under applicable state and federal laws and regulations. Use and maintenance of two existing wildlife exclosures and one water catchment would be allowed to continue under the "minimum tool" concept.

Proposed BLM vegetation treatments would be considered on a case-by-case basis in accordance with the Wilderness Management Policy. Fires would be controlled to prevent their spread to areas outside wilderness, the loss of human life or property. The BLM would suppress fires using methods that would cause the minimum adverse impact on wilderness character.

The BLM would continue to seek acquisition of wilderness surface (500 acres in each wilderness) and subsurface inholdings from owners willing to sell (refer to Map 24). Priority would be given to those lands that are undeveloped, or where their use would pose a threat to the area's wilderness character. Under Alternative A, the BLM would recommend no adjustments of either wilderness boundary. The size of either wilderness would increase only as the result of acquisition of inholdings. No other lands outside these two areas would be recommended for wilderness designation.

Issue 5--Wilderness Suitability

Chain of Craters WSA

Under Alternative A, all 18,300 acres within this area would continue to be managed as part of the NCA under P.L. 100-225 and the BLM's wilderness Interim Management Policy, which contains nonimpairment guidelines. The recommendation for the WSA would be that it was unsuitable for wilderness designation. When the Congress decides the area's wilderness status, the lands will either be managed as wilderness or released from study and managed under the existing land use plan.

Grazing operations in the WSA would continue to use 2,864 AUMs of forage per year, unless monitoring of forage condition and production indicated a need for change. Livestock operators would continue to maintain pre-FLPMA livestock developments using motorized equipment. The BLM could approve new, permanent livestock developments if they enhanced wilderness values, and would not require motorized access to maintain if the area was designated as wilderness.

The WSA would be managed to provide three ROS classes: roaded natural (7,800 acres), semi-primitive motorized (7,500 acres), and semi-primitive nonmotorized (3,000 acres; refer to Map 6). The unit would continue to offer opportunities for sightseeing, day hiking, mountain biking, backpacking, camping, semi-primitive motorized touring, horseback riding, birdwatching, landscape and nature photography, observation of geologic phenomena, and hunting.

Motorized vehicle use in the WSA would continue to be limited to existing vehicle routes (ways and trails). Approximately 44 of the 47 miles of inventoried routes would remain open, unless continued use was causing impairment of wilderness values. At that time the route(s) would be closed. Approximately 9 miles of the selected CDNST corridor passes through the WSA. This corridor was approved as part of the CDNST plan (USDA, FS 1993), and would remain open under Alternative A.

Visual resources in the WSA would be managed under a Class II designation. Any change in the basic landscape elements (form, line, color or texture) caused by a management activity could not be evident in the characteristic landscape.

Lands Contiguous to the Cebolla Wilderness

Under the No Action Alternative, 10,380 acres of lands contiguous to the Cebolla Wilderness (shown on Map 29) would continue to be managed in accordance with the decisions from the Rio Puerco RMP. The BLM would not recommend these lands for wilderness designation, nor would they be managed under the Interim Management Policy.

Issue 6--American Indian Uses & Traditional Cultural Practices

P.L. 100-225 explicitly recognizes the importance of continuing American Indian traditional cultural practices in the NCA. It is not appropriate for the BLM to develop alternative management actions specifically related to these practices. However, the agency has considered such uses as an important part of formulating proposed management actions for other issues under this plan's alternatives.

Issue 7--Cultural Resources

Under the Rio Puerco RMP, the NCA is designated a Special Management Area, with cultural resources recognized as an important contributing value. As directed in the RMP, specific activity plans were to have been prepared for key NCA resources, such as the Cebolla Canyon Community, the Armijo Canyon features, and the historical homesteads. The following section describes actions that would have been likely proposals under these activity plans but are now part of this El Malpais Plan.

(Note: Emphasis was also to have been placed upon management of Candelaria Ruin, a Chacoan outlier and designated Archeological Protection Site under the Chaco Protection Act. However, this ruin and much of its associated community are now included in the National Monument administered by the NPS so it is not discussed here.)

Use Allocation

The RMP allocates all PaleoIndian sites and most Archaic and Pueblo sites to be "Managed for Conservation," a goal that implies a commitment to maintain them in their present condition and protect them from potentially conflicting land or resource uses. Under this determination, the sites are assigned to the BLM's cultural resource use category, 'Conservation for Future Use" (refer to the Glossary), which allows no physical alteration of the properties. However, the BLM would make exceptions to this determination when current scientific use was needed to evaluate the properties. For Archaic and Pueblo sites, when most would remain under the management for conservation goal, a few could be physically altered for scientific use. A few historical sites are to be managed for conservation and scientific use. Very few sites of unknown cultural affiliation would be managed for conservation. Finally, any site identified as having sociocultural value would be managed for that value.

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Compliance with the National Historic Preservation Act

Under Alternative A, the BLM would complete Class III inventories in areas of direct impact before any surface-disturbing project was authorized, as stated in "Management Common to All Alternatives." The need to conduct inventories to address secondary impacts for development projects would be determined on a case-by- case basis, and decisions concerning mitigating measures would be made using routine procedures and considerations.

Inventory & Baseline Condition

Baseline information is needed for more effective ARPA enforcement and to identify sites vulnerable to natural deterioration. Additional inventories to document this condition would be proposed for the cultural resources in Cebolla Canyon, Armijo Canyon and other critical areas. The overall objective would be a 2½-percent inventory of the Planning Area over the life of this plan, which would result in approximately 6,553 acres of new Class III inventory.

Scientific Investigations

No special restrictions would be placed on archeological research outside wilderness. Applications for ARPA permits would be evaluated on a case-by-case basis, with the usual requirements for public participation, including American Indian consultation. It is difficult to predict the number of projects that would be proposed during the life of the plan, or the number of sites that might be affected. Past levels of activity on Albuquerque Field Office lands suggest that over the next 20 years, three to five projects would be permitted, with intensive investigations at a comparable number of sites, or less intensive investigations over a greater number of sites.

Scientific investigations in wilderness would have to conform to the "minimum tool" standard, that is, motorized vehicles and equipment would be prohibited unless no other reasonable alternative existed. If such use was approved it would be the minimum necessary. Extractive activities such as artifact collection would be allowed, but no significant impacts to visual, vegetative or other resources would be permitted.

Pottery Collection

Collection of potsherds is prohibited by ARPA. Under the No Action Alternative, the BLM would make no special provisions to accommodate sherd collection for pottery temper by American Indians.

Signs

Small, inconspicuous antiquities signs would be placed carefully to avoid drawing unnecessary attention to sites, while still discouraging casual vandalism and to aid in prosecuting violators. (These signs are usually 9 inches by 12 inches in size and are placed at ground level.) Under Alternative A, signs would be placed at approximately 100 sites during the life of the plan.

Access Easements & Consolidation of Ownership

Where major archeological or historical values are located partially on public land, the BLM would seek legal access easements across key parcels of private land, and would attempt to consolidate ownership from willing sellers. Examples of such areas include Cebolla Canyon and Cerritos de Jaspe.

Cadastral Survey

An important homestead-era structure, the Cebolla Canyon Schoolhouse, is located in Cebolla Canyon near the boundary between public and private land. This structure should be included in the stabilization program outlined below, but cadastral survey would be needed first to determine if it is on public or private land.

Road Closure

The BLM would close the 2-mile, two-track road leading into the Cebolla Canyon Community. Other access routes not identified for closure elsewhere in this plan could be closed if this was essential for resource protection.

Formal Monitoring

Formal photomonitoring programs have been initiated at the Dittert Site, Oak Tree Ruin, and Arroyo Ruin. This activity involves taking a series of identical photographs at intervals of 1 to 5 years so changes in site condition can be documented systematically. Under Alternative A, photomonitoring would continue at these sites with other sites potentially incorporated into the program as well.

Stabilization

The existing stabilization and erosion control projects at the Dittert Site, Oak Tree Ruin, Arroyo Ruin, Armijo Canyon Homestead, and Armijo Canyon Springhouse would be maintained. Stabilization and repair needs for ten homesteads in the Planning Area have been assessed (Gallagher and Goodall 1991), with recommended measures ranging from minor repairs to major stabilization, as well as an ongoing maintenance program. Under Alternative A, these recommended measures (or comparable ones designed to meet changed circumstances) would be implemented. New erosion control structures (e.g., checkdams, gabions) would be proposed for a dozen or so key properties to arrest natural deterioration.

Stabilization and erosion control measures would be allowed in wilderness, but only if resources unlikely to be duplicated elsewhere were threatened, and no other reasonable alternative existed. Such activities would be subject to the "minimum tool" requirement, and would not be allowed to degrade the area's overall wilderness character.

Fire Suppression

Eight to twelve of the best-preserved homesteads would be singled out as high-priority fire suppression zones.

Special Designations

The BLM would place no special priority on nominating properties in the Planning Area to the National Register of Historic Places. Possibly, four or five properties would be nominated during the life of the plan, perhaps as part of regional-scale thematic nominations (e.g. Chacoan Outliers, major Pueblo III sites, great kivas, or homestead-era schoolhouses). The Dittert Site could be added to the World Heritage List as part of the Chaco Culture listing.

Boundary Modifications

No additions to the NCA or boundary modifications would be recommended under this alternative.

Public Interpretation

The No Action Alternative provides for only limited public interpretation. A brochure would be developed for the Dittert Site, with a visitor registration box installed nearby. Similar measures could be taken for up to six historical homesteads, and the Ranger Station Nature Trail would feature the Ranger Station Reservoir. BLM staff would continue to organize interpretive hikes and visits to cultural resources properties such as the Dittert Site, Aldridge Petroglyphs, Ranger Station Nature Trail, and up to six homesteads on an occasional basis.

Issue 8--Wildlife Habitat

Under Alternative A, the primary emphasis would be to maintain wildlife habitats in the proper quality and quantity necessary to support the existing populations within the area. Wildlife habitat projects (e.g., water developments, vegetative manipulation, fences) would be undertaken throughout the Planning Area. These projects (up to three annually) would generally be identified for areas where population-limiting factors occurred (e.g., deteriorating habitat), and are described below.

Prescribed fires and wildland fires under prescription would be used throughout the Planning Area to maintain wildlife habitats in the desired vegetative condition to support appropriate populations. These burns would range in size from 50 to 1,000 acres, but would average about 500 acres each. Sikes Act funding for projects would be used wherever appropriate.

Where appropriate, the BLM would work with the NMDG&F and the FWS to conduct feasibility evaluations for reintroducing native wildlife and/or plant species within the Planning Area. The NMDG&F has identified the adjacent National Monument as a high-potential area for reintroducing desert bighorn sheep, a state endangered species (NMDG&F 1995). The Ramah Navajos sighted the area's last bighorn sheep in the 1950s, and skeletal remains have been carbon dated to between 1950 and

1955. Four high-priority areas for transplants of these sheep exist in New Mexico; the National Monument ranks third, after the Fra Cristobal and Magdalena mountain ranges. It is estimated that the area could support as many as 100 animals. Because much of the National Monument is surrounded by the Planning Area, it is reasonable to assume that some reintroduced animals would use public lands within the Planning Area.

Water Developments

Water catchments (guzzlers) come in many varieties, but most measure in the size range of 400 square feet (20 feet by 20 feet). In addition, an area 100 feet by 100 feet square is generally fenced to protect the water development from use by domestic livestock.

Vegetative Manipulation

Vegetative manipulation can be accomplished using five main methods: livestock grazing management practices, prescribed fires and wildland fires under prescription, mechanical, chemical or biological treatments. Vegetative manipulation for wildlife enhancement would generally be accomplished through livestock grazing management practices and prescribed fires. However, one or more other methods could be used in specific areas where they would accomplish the desired vegetative response in a more acceptable manner.

Livestock Grazing Management. These practices would be used to ensure that livestock grazing is contributing to the accomplishment of the vegetative objectives. AMP/CRMPs would incorporate grazing rest periods for pastures, season-of-use changes, and range improvements (e.g., waters, fences).

Prescribed Fires & Wildland Fires Under Prescription. A portion of the existing vegetation (livestock/wildlife forage) within the treatment area would be consumed by fire. Individual burn plans would emphasize prescriptions to create a mosaic of different plant development stages throughout the vegetative community. To support the existing populations, the overall loss of forage would be minimized within any one allotment or wildlife habitat area.

Mechanical Treatments. No large-scale vegetative manipulation (e.g., chaining or clear cutting) would be undertaken within the Planning Area. Mechanical manipulation of vegetation would generally be limited to the use of chainsaws and other small equipment to remove saltcedar, rabbitbrush, sagebrush and piñon-juniper where vegetative or wildlife objectives have been identified. The areas of manipulation would be limited to 50- to 100-acre plots, where only selective cutting would occur.

The project plans would emphasize prescriptions to create a mosaic of different development stages throughout the vegetative community, except where saltcedar control was needed. In these areas, all trees would be removed to the greatest extent possible.

Chemical Treatments. Approved Environmental Protection Agency (EPA) chemicals for the control of saltcedar, rabbitbrush, sagebrush and/or piñon-juniper would be applied only by hand. No aerial application of chemicals would be undertaken within the Planning Area. A portion of the existing vegetation (trees, brush) within a treatment area would be removed, except in areas where saltcedar is to be eliminated as discussed above.

Biological Treatments. Many agencies and private companies are working on biological agents to help control exotic plants (e.g., insects that attack saltcedar). When these biological controls became available, they would be evaluated with other current methods to determine which vegetative manipulations were most appropriate for a specific project.

Issue 9--Vegetation

Accomplishment of the vegetative objectives would require a comprehensive management program to include use of watershed, livestock grazing, fire, riparian, and forest and woodland practices. Under Alternative A, only livestock grazing and riparian management practices would be implemented.

Removal of trees to improve habitat, watershed and/or ecological condition is consistent with P.L. 100-225. However, no removal (thinning) of trees for resource improvement has been permitted since the NCA was established. Therefore, thinning of trees would not be considered under Alternative A.

To provide for improved livestock grazing use, AMPs/CRMPs have been developed for the Los Pilares, Techado Mesa and Los Cerros Allotments, and are scheduled for completion in 1998-99 for the Cerro Brillante and El Malpais Allotments. These plans would be periodically reviewed and revised as needed. Based on the results of monitoring, new plans would be developed and/or livestock grazing use reduced. The minimum livestock grazing rest period provided in the management plans would be May 15 to June 30 and July 1 to September 15 each year. At least one pasture per allotment would be rested during each period.

New range improvements (waters and fences) to facilitate rest from livestock grazing would be considered for grazing allotments (with or without an AMP/CRMP). A site-specific EA would be completed for any approved range improvements.

On the east side of the NCA, the BLM has fenced the riparian area surrounding Cebolla Spring to exclude livestock grazing. Spring areas used by livestock would continue to be fenced, and would be developed to provide water for livestock and wildlife away from riparian areas. Springs not used for livestock water would remain unfenced. Riparian vegetation would not be planted under Alternative A, nor would treatments to remove exotic species such as saltcedar and Russian olive from riparian areas be permitted.

A Fire Management Plan is scheduled to be completed after this El Malpais Plan is finalized. Until this fire plan is completed, all wildfires in the Planning Area will be suppressed. The fire plan will allow for prescribed fires and wildland fires under prescription for fuels management, protection of private property, and (secondarily) vegetation management. Up to three fires ranging in size from 50 to 1,000 acres each would be expected each year.

Watershed management practices (e.g., structures and vegetative treatments) would provide for accomplishment of vegetative objectives. Since passage of P.L. 100-225, grazing permittees have built two small diversion dikes. In addition, small erosion control structures were constructed to protect an archeological site. Construction of other small structures to spread or divert water would be considered under this alternative. The treatment of noxious weeds would be allowed under this alternative. Control of noxious weeds (e.g., knapweeds, bindweed, leafy spurge, thistles) would be by mechanical, chemical or biological means. Site-specific EAs would be completed before any structural or noxious weed treatment.

Issue 10--Boundary
& Land Ownership Adjustments

Under Alternative A, the BLM would not recommend to the Congress any changes in the NCA or Cebolla Wilderness boundaries. The total size of the NCA would remain at 262,100 acres (refer to Table 1-1 in Chapter 1 and Map 30). The Acoma Pueblo's request to exclude 960 acres of tribal lands from the NCA and Cebolla Wilderness would not be recommended to the Congress. The 24,200 acres outside the NCA boundary but within the Planning Area (Brazo and Breaks Non-NCA Units) would be managed under the Rio Puerco RMP. The 15,100 acres now managed by the Socorro Field Office (Tank Canyon-SFO and Techado Mesa-SFO Units) and 4,000 managed by the Albuquerque Field Office (Cerro Brillante-AFO and Continental Divide-AFO Units) would not be recommended as additions to the NCA, and would continue to be managed under the Socorro RMP and Rio Puerco RMP, respectively.

The acquisition priorities identified in the NCA Land Protection Plan (USDI, BLM 1989) would remain the same. These are based on the legislative intent and direction established by P.L. 100-225, which directs the BLM to acquire land and mineral rights to protect important natural, cultural, and scenic values within the NCA. However, the law does not direct the agency to consolidate all land within the NCA into federal ownership. (A summary of the Land Protection Plan priorities, rationale and status is included in Appendix H.)

The 22,000 surface acres of public lands in the Planning Area outside the NCA (Breaks and Brazo Non-NCA Units) would remain open to the public land laws, mineral exploration and development.

Alternative B--Resource Use

BLM management under Alternative B, the Resource Use Alternative, would support direct human actions. Economic uses such as grazing and recreational use served by outfitters and concessionaires would be emphasized. More developments related to recreation, livestock, and wildlife are proposed, and extractive activities such as archeological excavations and collection of potsherds by American Indians would be allowed. A large number of existing roads would remain open under this alternative, and vegetative management would include prescribed fires, wildland fires under prescription, and seedings.

Issue 1--Recreation

Under Alternative B, the BLM would provide recreation users of the Planning Area with semi-primitive nonmotorized, semi-primitive motorized, and roaded natural settings (as identified by the ROS classification system and displayed on Map 7). The acreage within these opportunity settings would be similar to that identified for the No Action Alternative (refer to Table 2-6). Increased development would be undertaken to facilitate activities taking place in the Planning Area, e.g., camping, picnicking, horseback riding, hiking and sightseeing. Opportunities to participate in such activities as hunting, mountain biking, back-country driving, exploring and learning about historical and archaeological sites would also exist. Recreational activities of interest to smaller populations, such as caving, climbing, skiing, shooting, trapping, photography, pack trips, enjoying wilderness solitude, and road biking would continue to be offered.

Interpretive messages would be included on informational kiosks and wayside exhibits at recreational access points, picnic areas and trailheads. Locations with messages would include the NCA entry sites, the Narrows Rim Trail and Picnic Area, West Malpais Wilderness, CDNST, Dittert and other archeological and historical sites, the Ranger Station and others. More guided interpretive hikes would be offered than under Alternative A.

One developed campground would be built on the east side, and dispersed camping would be allowed throughout the remainder of the Planning Area. Camping at other BLM developed facilities would be prohibited. The NPS plans to develop a few camping units in the National Monument; these would serve campers on the west side of the Planning Area with a preference for developed or semi-developed sites.

Picnicking would be allowed to occur almost anywhere in the Planning Area. Such opportunities would be enhanced through upgraded facilities at the southern end of The Narrows, and developed facilities at La Ventana Natural Arch and the Cerro Americano CDNST trailhead.

The BLM would increase opportunities for trail hiking and associated activities by establishing up to 20 additional trails (5 now exist). This would result in an estimated 77 miles of trail, including the 25-mile-long CDNST (refer to Map 11). These additional short trails would provide more convenient access to selected natural, cultural, and historical features or links with other established trails in the Planning Area. In addition to the established trail system, approximately 19 miles of closed vehicle routes would be available for use as informal hiking trails.

The new trails would lead to the Dittert Site, Aldridge Petroglyphs, Lobo Canyon Petroglyphs, Armijo Canyon Homestead and Springhouse, Stone House, three other selected homesteads, the West Malpais Schoolhouse, the Pinole Site, the Citadel, and the Cebolla Canyon Community. Others would connect as side trails with established trails or intersect with the CDNST from an established trailhead. Other newly established trails would provide hiking opportunities to lava tubes in the Chain of Craters and the natural features of Cerro Americano, Cerro Brillante, and La Rendija. A short loop trail extending from the campground in the Spur Unit would also be established.

The BLM would provide additional horseback-riding facilities and upgrade existing ones. For use on the east side of the Planning Area and the Cebolla Wilderness, facilities and horse gates would be provided at The Narrows and Armijo Canyon trailhead. On the west side, facilities would be provided at the Cerro Brillante trailhead and near the end of the cherry-stemmed road leading to Hole-in-the-Wall.

Designated vehicle travel routes in the Chain of Craters, Cerritos de Jaspe and Brazo Units would be promoted as routes for mountain bike use. These routes are not as heavily traveled by motor vehicles as some others in the Planning Area. (Note: The Chain of Craters WSA would be promoted for use only if released from wilderness review by the

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Congress. Mountain bike use would not be promoted while the area was in study status.) Approximately 166 miles of designated vehicle routes would be available for mountain bike use in these units, with a variety of experiences and levels of difficulty. These would provide a system of loop trails.

Approximately 338 miles of BLM-designated vehicle routes would be available for sightseeing, driving for pleasure, or back-country driving. Under Alternative B, four Back Country Byways would be designated to encourage driving where high scenic, historical or other public-interest values existed. To enrich visitors' recreational experience, the BLM would identify 15 areas or stretches along roads such as seasonal playas or cliff faces for wildlife viewing.

Visual Resource Management

The VRM Class objectives would continue to be the basic tools for managing visual resources on public lands. Map 15 displays the VRM classes the BLM would assign to the public lands within the Planning Area under Alternative B (refer to Table 2-8). The RMP would be amended by adjusting some previously assigned classes, and by assigning classes to those acquired lands outside the NCA not covered in previous land-use planning.

To emphasize the maintenance of natural values, the BLM would continue its policy of assigning VRM Class I to all designated wilderness lands, included the expanded portions of the Cebolla Wilderness. The assignment of VRM Classes II and III to lands outside wilderness would allow for limited to moderate levels of change to the basic elements of form, line, color, and texture found in the predominant natural features, while still affording protection of the scenic values in the Planning Area.

The BLM would provide for more resource use opportunities and facility development by reassigning 24,330 acres from the more restrictive Class I to the less restrictive Class II, (including acreage within the Neck, Cerritos de Jaspe, Cerro Brillante and Continental Divide Units). Under Alternative B, the BLM would assign VRM Class III to 14,110 acres of public land to accommodate resource use and moderate levels of visual change. The existing lands under Class III objectives in the southwest corner of the Cerro Brillante Unit and northern portion of the Neck Unit would remain under this classification. The 60 acres of public land immediately surrounding the Ranger Station on NM 117 would also be included as VRM Class III lands. (The Ranger Station is located on a parcel of state land acquired since the passage of P.L. 100-225; this parcel therefore was not assigned a VRM Class in the RMP.) To maintain the scenic values in the remainder of the Planning Area as required in P.L. 100-225, the BLM would manage it under assigned VRM Class II objectives.

Issue 2--Facility Development

As stated above, under Alternative B the emphasis for recreation would be on facilities to support developed opportunities such as picnicking, camping, hiking, horseback riding, mountain-bike use, caving, wildlife watching, and opportunities to explore and learn about historical and archeological sites. Most of the new development would be for trails, trailheads, parking and a campground. (Proposed developments are shown on Map 11.) The BLM would also upgrade some existing facilities. Interpretation would occur through one-on-one contact with visitors (in public programs, guided hikes, or visitor center contacts); printed brochures, exhibits, interpretive media and publications at the Ranger Station; wayside exhibit panels; and self-guided trails with interpretive signs and/or kiosks.

The agency would develop a campground in the Spur Unit. (The exact location would be determined after cultural resources surveys, T&E surveys, and site investigations were completed.) The facility would be designed to accommodate up to 40 units for single-family use and one unit for multi-family or group use over an area up to 10 acres in size. In addition to a table, cooking facilities and a leveled space for a tent, each single-family unit would have a leveled parking spur large enough to accommodate either a small, self-contained recreational vehicle or a vehicle with a trailer or tent camper. Parking for the group-use unit would be of sufficient size to accommodate visitors.

Two universally accessible vault toilets would be constructed within the campground, and if possible, drinking water would be provided. A 50-person amphitheater for interpretive and environmental education programs would be built within a 5-minute walk of the campground. The agency would conduct evening programs regularly during the summer.

The BLM would upgrade an existing dirt road providing access from NM 117 to an all-season, gravel condition. Within the campground, roads and parking would be surfaced for all-weather use. In conjunction with the campground, the agency would construct a ½-mile hiking trail that would loop through adjacent lands as it passed the amphitheater.

Under Alternative B, the BLM would develop additional trails and trailheads for resource protection, and to distribute visitors to the back country and selected features. The Cerro Brillante trailhead for the CDNST would be used for hiking access to the West Malpais Wilderness. From the Cerro Brillante trailhead, a trail would be marked to the old schoolhouse in the West Malpais Wilderness. The BLM would also develop trails from other trailheads and vehicle pullouts to the Lobo Canyon Petroglyphs, La Rendija, Cerro Rendija, and Cerro Americano. If "social trails" (paths developed as the result of continual undirected visitor use) exceeded the established LAC standards for trails in an area, the agency would consider developing them.

With most of its length in the Cebolla Wilderness, the Narrows Rim Trail would be improved using the minimum tool technique to facilitate resource and wilderness protection, and to help direct visitor use to a single pathway. The BLM would provide parking for up to 20 vehicles at the trailhead to accommodate hiking and horse access to the Cebolla Wilderness and the trail. The parking lot would be paved and located south of the picnic area. The trailhead facilities (including a kiosk) located outside the wilderness boundary would be built of rustic materials, and the trail would be marked as allowed in wilderness. Horseback riders at this trailhead would continue to be served by a horse-accessible gate. (Refer to Figure 2-d for a possible design of these facilities.)

For access to the West Malpais Wilderness and use of the informal Hole-in-the-Wall Trail, the BLM would establish a rustic-style trailhead with a kiosk, gravel parking lot, and horse facilities at the end of the cherry- stemmed road. The parking area would be built to accommodate up to 20 vehicles. (Refer to Figure 2-e for a possible design for these facilities.)

Alternative B would include the construction of trailheads with rustic facilities along the CDNST at Cerro Americano and Cerro Brillante. Each would contain a kiosk and graveled parking area for up to 30 vehicles. The trailhead at Cerro Brillante would provide for horse use. (Refer to Figure 2-e for a possible design of these facilities.)

Mountain-biking facilities would be provided at the Cerro Americano CDNST trailhead. Trailhead facilities to accommodate mountain-bike users in the Cerritos de Jaspe and Brazo Units would be built only if mountain bike routes were established there.

The BLM would develop picnic areas at La Ventana Natural Arch and the Cerro Americano CDNST trailhead. The developments would be designated for day-use only. Up to ten walk-in units for single-family picnicking would be scattered from the edge of the parking area at each of these sites. A vault toilet and water source, if possible, would be developed at Cerro Americano.

The agency would develop The Narrows for day use, with up to 20 sites, paved access and vault toilets. If possible, the BLM would develop a drinking water source. (Refer to Figure 2-d for a possible design.)

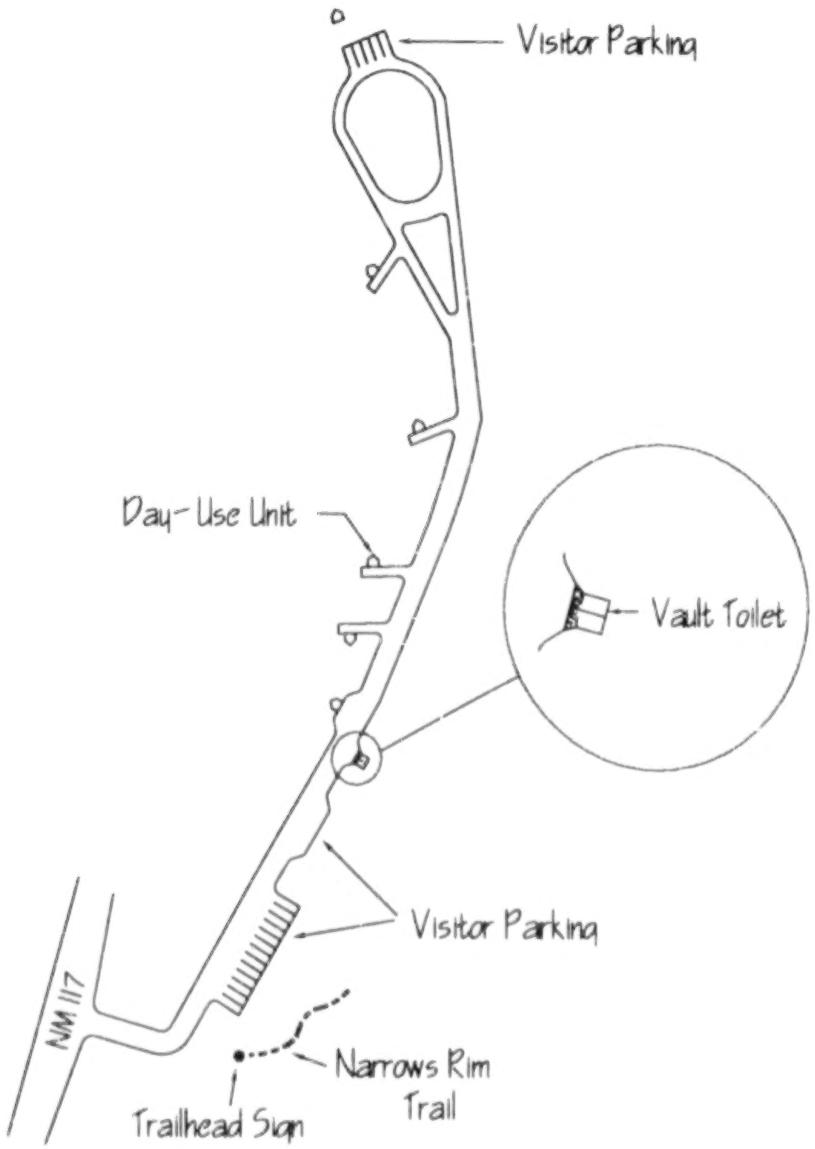

Figure 2-d
The Narrows Day-Use Recreational Site

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

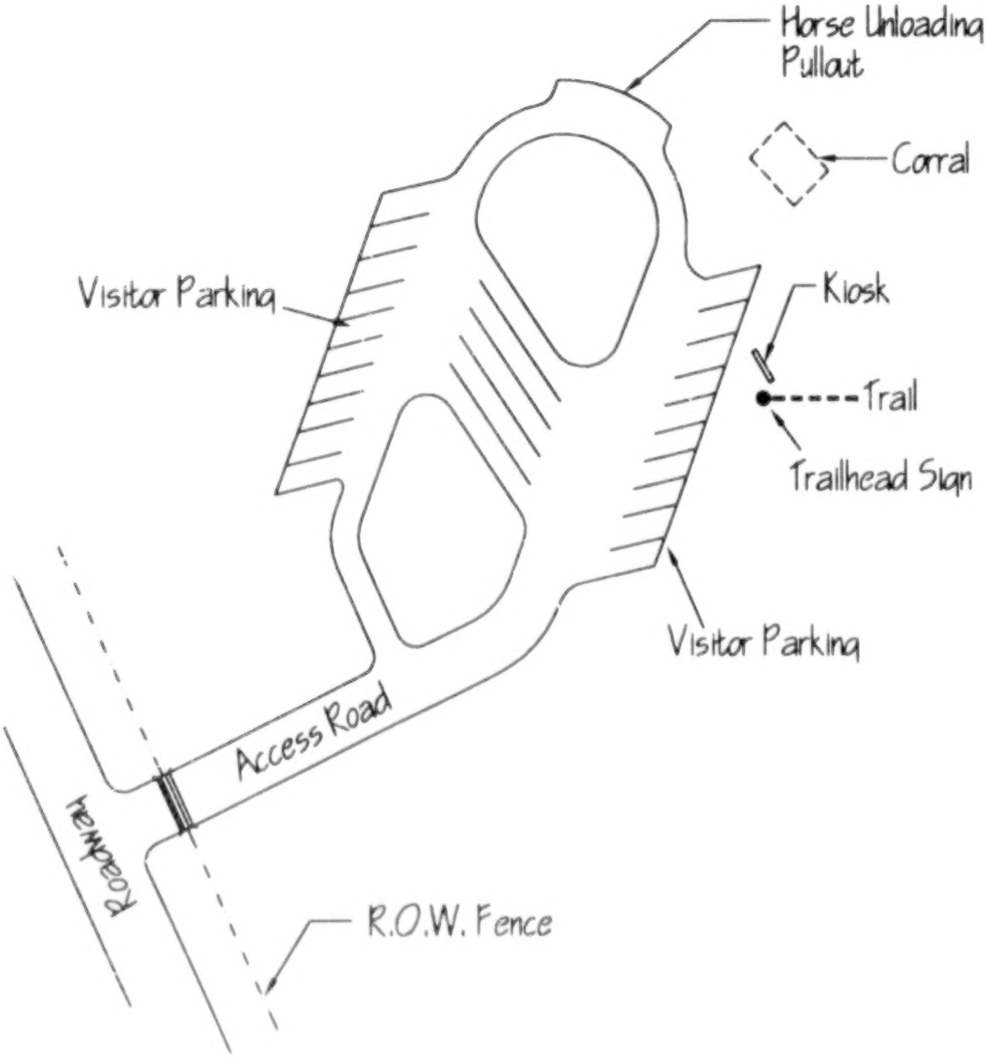

Figure 2-e
Typical Trailhead Facility
to Accommodate Horseback Riders

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

The BLM would designate four back country byways, the NM 117-CR 42-NM 53 loop drive, and routes in the Brazo, Cerritos de Jaspe, and the Chain of Craters Units. The agency would work in partnership with other agencies to promote these byways. For each byway, between one and four signs and between one and four kiosks would be installed and maintained (refer to Figures 2-e and 2-f, and to Map 11 for locations). The typical sign dimensions would be 3 feet high by 5 feet wide, with the full height (including support posts) at 6 feet.

In addition to the existing trail at the Ranger Station that passes by the reservoir, the BLM would develop a self-guided interpretive trail to another prehistoric cultural site and a homestead. A trailhead with a kiosk and surfaced parking for up to 10 vehicles would be constructed at the beginning of the trail. (Refer to Figures 2-g and 2-h for possible designs of such a facility.) Roads accessing these trailheads would be upgraded if needed to an all-weather, graveled condition. Primitive trailheads would be developed at the following cultural/historical properties as time, staff and budget allowed: the Pinole Site, The Citadel, Cebolla Canyon Community, Lobo Canyon Petroglyphs, Aldridge Petroglyphs, Stone House and other deserving properties.

The BLM would develop the Dittert Site to provide for recreation and interpretation. The agency would upgrade the access road, and install a surfaced parking lot (built initially for up to 25 vehicles, but expandable). At the trailhead for the Dittert Site, Cebolla Wilderness, Armijo Canyon Homestead and Springhouse, the agency would develop horseback riding facilities, a self-guided trail to and around the site, a kiosk and toilets. The trailhead would be fenced to confine use and protect resources. (Refer to Figure 2-i for a possible design and layout of these facilities.)

The agency would use three to five interpretive kiosks at Planning Area entry points to promote stretches of highways and roads for watchable wildlife. Watchable wildlife signs would be installed along CR 42, NM 53, and NM 117. The Cerro Americano trailhead kiosk would be used as another location for highlighting wildlife viewing opportunities (refer to Map 11).

The BLM would build between three and five larger identification signs at entry points along major highways and roads in the Planning Area, as shown on Map 11. Additional identification signs would be posted as indicated by public comment or to eliminate confusion. These signs would typically measure 4 feet high by 8 feet wide, and stand 8 feet tall (including support posts). The agency would develop and install one large identification sign on each side of I-40 in Sec. 16, T. 10 N., R. 9 W. for viewing from the interstate. Typical measurements for these signs would be 8 feet by 16 feet, with a total height of 10 feet, and a rock base approximately 3 to 4 feet wide by 16 to 20 feet long.

The agency would construct pullouts and develop interpretive kiosks at three to five NCA entry locations, as shown on Map 11. These locations would include the northern end of NM 117, the junction of NM 117 and CR 42, the western entrance along NM 53, the southern entrance along CR 41, and the first public land encountered along NM 53 (Sec. 16, T. 9 N., R. 10 W.). (Refer to Figure 2-f for possible design and layout of these kiosks.)

New facilities would be designed and built to have a consistent appearance throughout the Planning Area, and would blend with the area's surrounding landscape and local architectural styles.

Issue 3--Access & Transportation

Under the Resource Use Alternative, the opportunities for motorized access would be maximized to the extent allowable using existing routes. Opportunities for nonmotorized access would continue to be made available.

Motorized vehicle use on 143,550 acres (58 percent of the Planning Area) would be "limited" (refer to Table 2-10). (This would include lands not previously addressed in the RMP, and those designated as open through the RMP.) This restriction, which formerly limited motorized travel to *existing* roads and trails, would be changed to limit such travel to *designated* roads and trails. The remaining public lands within the Planning Area would be managed as "closed" because of wilderness.

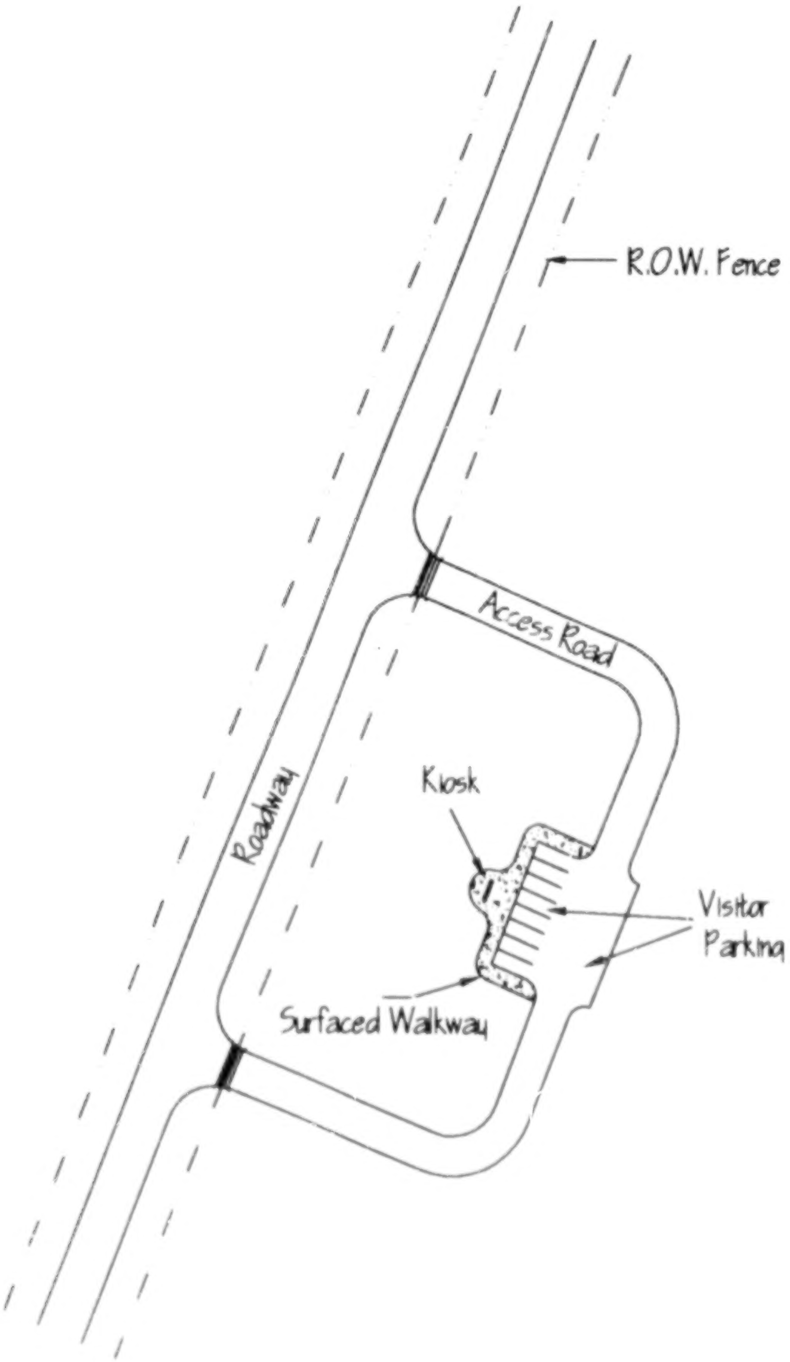

Figure 2-f
Typical Kiosk

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

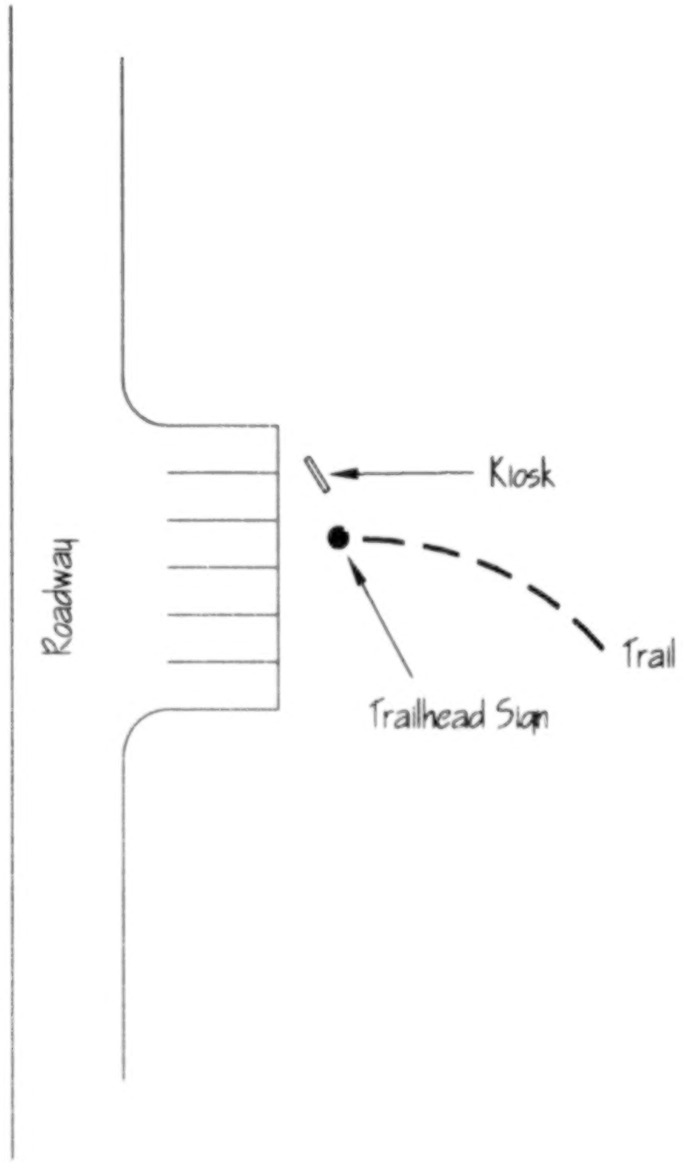

Figure 2-9
Typical Pullout Trailhead Facility

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

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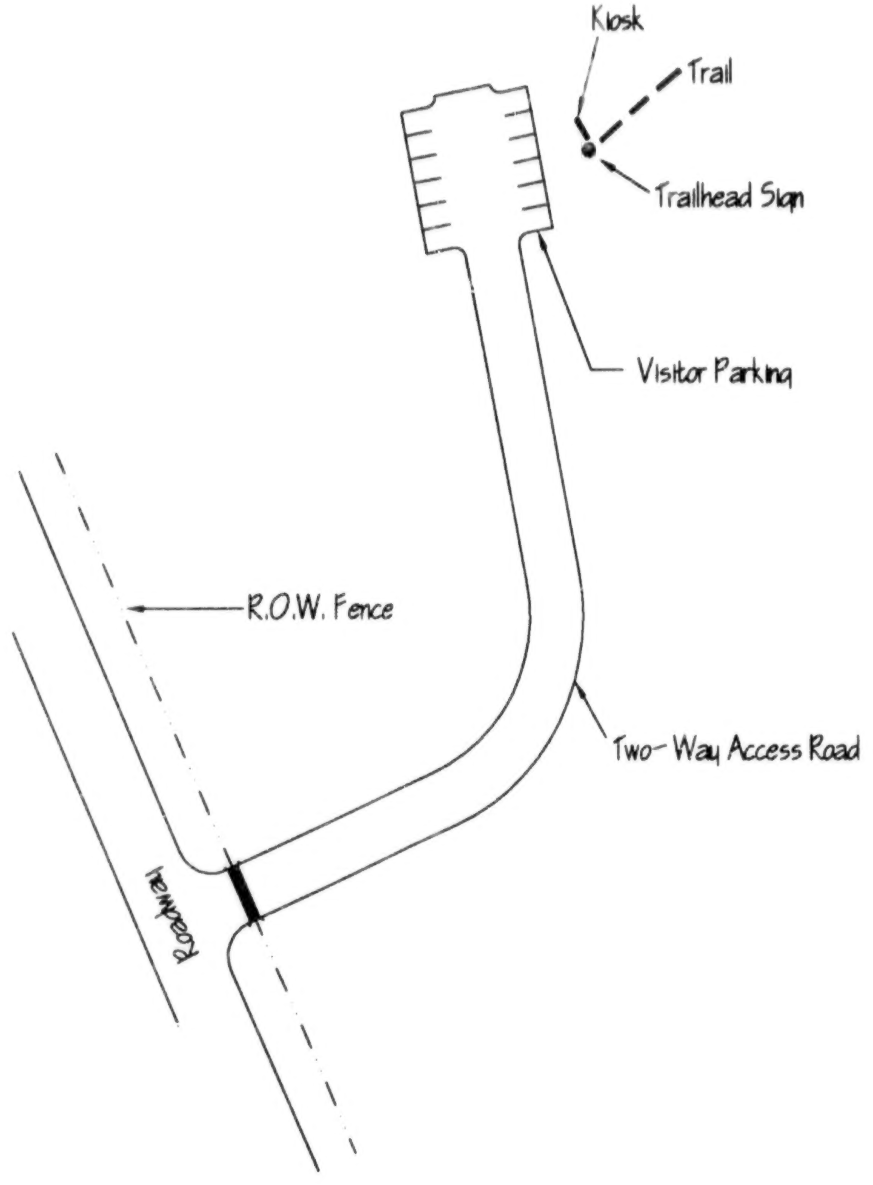

Figure 2-h
Typical Off-Roadway Trailhead Facility

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

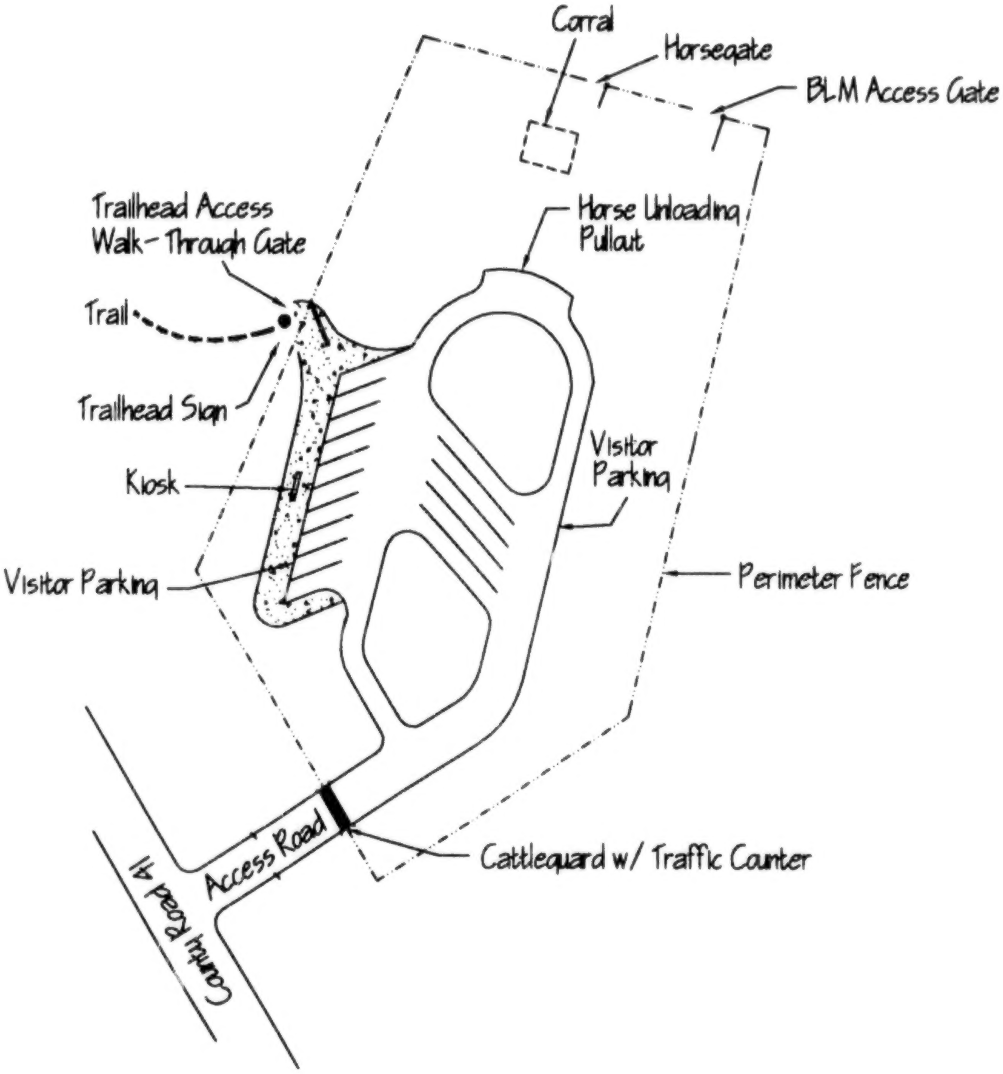

Figure 2-1
Dittert Site Trailhead Facility
to Accommodate Horseback Riders

This figure is an example of a preliminary concept. It is shown for informational purposes only, to give an idea of the potential development of this facility or site.

The number of inventoried routes left open for motorized vehicle use outside wilderness would be maximized. These roads, as shown on Map 19, would be those best suited and located for public use of the resources and for BLM management. Approximately 337.5 miles of collector and local vehicle routes (93 percent of these inventoried BLM routes now available) would remain available for public use as designated routes (refer to Table 2-11).

A total of 76 miles of state highways, county, U.S. Forest Service and private roads in the Planning Area would remain open, as would 18.4 miles of BLM arterial roads. The BLM would build no new roads nor acquire new easements for public access to public land parcels. The agency would maintain and reroute roads as funding permitted to protect or improve resources.

Approximately 17 miles of local routes in the NCA and 2 miles in non-NCA units would be closed to vehicle use. These would be reclaimed through natural and mechanical means to bring them back into resource production. Of the roads closed in the NCA, 2.3 miles would be within the Chain of Craters, 2.8 miles in the Spur, 7 miles in the Continental Divide, 2.4 miles in the Cerritos de Jaspe, 1.8 miles in the Breaks, and .3 mile in the Brazo Unit. Outside the NCA, inventoried vehicle routes in the Brazo (1.9 miles) and Breaks (.5 miles) Non-NCA Units would be closed. Vehicle use, except as authorized, would be prohibited on closed routes. Routes to be closed would be those abandoned or not showing signs of regular or continuous use during the most recent inventory (1996), and those duplicating other routes that serve the area, causing resource damage, or serving no apparent need.

Vehicle use would continue to be authorized on 6.3 miles of routes outside wilderness and 23.3 miles of routes within wilderness. All other use of motor vehicle and mechanical transport by the general public would be prohibited on the 104,450 acres of designated wilderness. (Note: For analytical purposes, it has been assumed that under Alternative B, the Congress would not designate the Chain of Craters WSA as wilderness and would release it from further study. Therefore, motor vehicle use of the area would still occur on designated routes.)

Access to public land within the Planning Area by cross-country, nonmotorized means, (e.g., horseback, backpacking, hiking) would be allowed to continue, except for mountain bike use in wilderness. Because of terrain and vegetative conditions, most use of this type would be directed to existing or abandoned back-country roads and the few trails within the Planning Area.

As under Alternative A, American Indians would continue to be able to use existing motor vehicle routes to access the Planning Area for traditional uses and cultural practices.

The BLM would concentrate its maintenance efforts on designated arterial and collector routes, so local routes would remain rough and impassable at times. The agency would develop additional maps, brochures and signs to inform the public of the access opportunities and restrictions, and would maintain the signs marking designated routes and directing users.

Issue 4--Wilderness Management (Cebolla & West Malpais)

Under Alternative B, the BLM would emphasize improved opportunities for users to access wilderness without diminishing the areas' character. The agency would recommend two adjustments to the Cebolla Wilderness boundary, the first to include an additional 3,650 acres of contiguous public land (shown on Map 26). At the request of Acoma Pueblo, the BLM would also recommend to the Congress that the boundary be amended to exclude 160 acres of formerly private land acquired by the pueblo. Located in Sec. 12, T. 7 N., R. 10 W., these are aboriginal lands claimed by Acoma that have recurring value to their people. These lands are adjacent to other Acoma lands excluded from the Cebolla Wilderness when the existing boundary was defined.

When the wildernesses were accessible to the public, BLM staff and volunteers would continue to patrol them once a month at minimum. More frequent patrols would occur during the spring through fall seasons, when use was greater.

The areas would continue to be used by the public for primitive types of recreation that did not require the use of motor vehicles, motorized equipment or other forms of mechanical transport such as mountain bikes. Authorized users could continue to access non-federal inholdings and livestock grazing operations by motorized vehicle over 5.5 miles of routes in the Cebolla Wilderness and 17.8 miles in the West Malpais Wilderness. Livestock grazing access and use would continue under P.L. 100-225 and the conditions set [illegible] the BLM RIM plans (1990, revised 1996) and AMPs/CRMPs for the individual allotments overlapping these two areas. The BLM has selected routes that would cause the least impact to the areas' wilderness character while serving the purposes for which the land was held or used

The existing facilities on the wilderness perimeters along with trail improvements for recreation users and resource protection purposes, would remain in place for continued use and protection. La Ventana Natural Arch, The Narrows and Armijo Canyon would continue to serve as primary access points to the Cebolla Wilderness. The Dittert Site and The Narrows would be improved to accommodate visitors. Two roads would receive more frequent maintenance to control erosion and improve access. These are the Cebolla Canyon Road (No. 2003) that splits the Cebolla Wilderness, and the Sand Canyon Road, a dead-end cherry-stemmed road. The Narrows Rim Trail, which extends 3.5 miles into the wilderness, would be better marked to direct visitor use.

For the West Malpais Wilderness, the trailhead at the end of the cherry-stemmed road from CR 42 would continue to serve as the primary access point. Access to the trailhead and the trailhead itself would be improved to accommodate visitors and horseback use. The BLM would continue to identify a user access trail that follows an old vehicle route leading into the Hole-in-the-Wall, a major attraction of this wilderness.

At La Ventana Natural Arch, the BLM would continue to provide permanent restroom facilities and a paved parking lot. Other facilities at trailheads and other entry points would be upgraded to improve access opportunities, services and information. Additional onsite information would be provided to better inform and educate the public about the areas and their use, including during patrols. Signs would identify the boundaries, the wilderness name, and some regulations governing use of the areas. Information about the areas would continue to be available at the Ranger Station on NM 117 and BLM offices in Grants and Albuquerque, and would be given through personal contact when BLM staff and volunteers encountered visitors during area patrols.

Traditional American Indian cultural practices would be allowed to continue in the two areas in a manner consistent with the intent of the Wilderness Act. Motor vehicle access to the perimeter of each wilderness would be allowed, but such use inside the wilderness would be prohibited, unless the BLM has granted prior authorization after consultation and evaluation. When the BLM authorized such use of motorized vehicles by American Indians, stipulations to control impairment of wilderness character would be met. Upon request, the BLM would temporarily close the smallest practicable area for the minimum period needed to accommodate American Indian activities.

In most instances, cultural and historical resources would be subject to the forces of nature in the same manner as other wilderness resources. Stabilization and scientific studies of selected cultural resources and historical sites within the two wildernesses would continue as required to meet protection and preservation mandates. Research would be authorized if it could be carried out unobtrusively using methods compatible with preserving the areas' wilderness character.

Except for guided trips, visitor information and education programs about sites within wilderness would be located outside the wilderness boundary or dispersed at other outside locations. Additional interpretive information about the Dittert Site, which is located within the boundaries of the Cebolla Wilderness, would be placed at the trailhead outside the boundary in Armijo Canyon. No additional onsite interpretation would be provided, although site maintenance and monitoring would continue.

Wildlife habitat management would continue to be guided by the BLM's Wilderness Management Policy. Hunting and trapping would be permitted, subject to applicable state and federal laws and regulations. Use and maintenance of the two wildlife exclosures and the one water catchment would be allowed to continue. The exclosures would be maintained using the "minimum tool" concept, with restricted vehicle access and use of motorized equipment.

Vegetative treatments would be considered on a case-by-case basis in accordance with the BLM's Wilderness Management Policy. Fires would be controlled to prevent their spread to areas outside wilderness, the loss of human life or property. BLM fire suppression methods would be designed to cause the minimum adverse impact on wilderness character.

The BLM would continue to seek acquisition of wilderness inholdings from willing sellers, including approximately 300 acres of private surface in Cebolla (not to include 160 acres of Acoma aboriginal land) and 500 acres in West Malpais. Priority would be given to those lands that were undeveloped or where use would pose a threat to wilderness character. When acquired by the BLM, these lands and any subsurface (mineral) interests would be managed under wilderness restrictions.

Issue 5--Wilderness Suitability

Chain of Craters WSA

Under Alternative B, the BLM would not recommend the WSA as suitable for wilderness designation. For analytical purposes, it is assumed that the Congress would accept this recommendation and release the area from further wilderness study. The resources in the 18,300-acre Chain of Craters would then be managed and protected under this plan amendment, and restrictions on uses of the area would no longer apply. Users would have opportunities for roaded natural types of recreation on 7,800 acres, semi-primitive motorized types on 6,800 acres, and semi-primitive nonmotorized types on 3,700 acres.

Lands Contiguous to the Cebolla Wilderness

The BLM would recommend for inclusion approximately 3,650 acres of public land contiguous to the Cebolla Wilderness (refer to Map 26). Until the Congress designated or released these lands, the agency would manage them under the Interim Management Policy (except for minerals). Any land formerly designated as wilderness would be managed under BLM Manual 8560 (Management of Designated Wilderness Areas) and the regulations at 43 CFR 8560. A total of 6,730 acres recommended as non-suitable for designation would be managed by the BLM under the management prescriptions identified in this alternative and applicable to this area.

Issue 6--American Indian Uses & Traditional Cultural Practices

BLM management of this issue under Alternative B would be the same as discussed above for Alternative A. Although the BLM has formulated no specific actions related to these practices, the agency has considered them in developing actions under Alternative B for other issues (e.g., Issue 7 below).

Issue 7--Cultural Resources

Under Alternative B (Resource Use), the BLM would emphasize the information potential of archeological sites in the Planning Area, encouraging archeological research and seeking to preserve properties for this purpose. Significantly increased stabilization and inventory activities would be undertaken. The actions proposed under this alternative would be feasible at funding levels available in recent years, but would require that more of the available BLM funding and personnel be directed to the NCA, and less be directed toward management of cultural resources elsewhere on Albuquerque Field Office lands.

Use Allocation

The following properties would be managed for public values and allocated to public use: Cebolla Canyon Community (including Oak Tree Ruin and The Citadel), Pinole Site, Dittert Site, Ranger Station Nature Trail, Lobo Canyon Petroglyphs, Aldridge Petroglyphs, Armijo Canyon Homestead, Armijo Canyon Springhouse, Cebolla Canyon Schoolhouse (if found to be on public land), Stone House, West Malpais Schoolhouse, Rowe Homestead, and Worley Homestead. These sites would be available for public interpretation.

Other prehistoric and historical sites would be managed for information potential and allocated to scientific use. These sites would be protected in their current condition, but would be available for scientific investigation. Any site could be shifted from scientific use to public use if needed for an interpretative program, and if adequate measures were taken to protect its information potential and scientific value.

Compliance with the National Historic Preservation Act

Because recreational activities would be emphasized under this alternative, secondary impacts would be of special concern. In addition to the routine Class III inventories (noted above in "Management Common to All Alternatives"), the BLM would require an inventory over an area of at least ¼ mile around each proposed visitor use development or cluster.

Inventory & Baseline Condition

To identify areas vulnerable to looting, vandalism, and natural deterioration, and to document their baseline condition, the BLM would adopt an aggressive inventory program in the Planning Area. Inventories would include sample surveys, intensive surveys of areas with known, high site densities, and those targeting rock art and homesteads. The agency would attempt to achieve Class III inventory of 5 percent of the NCA (13,105 acres of new inventory) during the 15- to 20-year life of this plan.

Scientific Investigation

Under Alternative B, the BLM would encourage scientific uses, including investigations that would result in alteration of the physical site characteristics. However, any such proposal would still be subject to consultations with local American Indians and compliance with NHPA. The BLM would also continue to ensure that all such projects met current professional standards, and that adequate provisions were made for analysis, write-up and curation of any collected materials. Over the life of the plan, five to eight such projects would be expected

Scientific investigations in wilderness would conform to the "minimum tool" standard, i.e., motorized vehicles and equipment would be prohibited unless no other reasonable alternative existed. If approved, such use would be the minimum necessary. Extractive activities such as artifact collection and excavation would be allowed. Short-term impacts to visual, vegetative, and other resources would be permitted, but only if long-term impacts could be fully mitigated.

Pottery Collection

Although collection of prehistoric pottery is generally prohibited by ARPA, an exception can be made if it is formally determined that these items are no longer of archeological interest. Under Alternative B, the BLM would consider making such a determination on a site-by-site basis, but only if such activity was found to be a traditional cultural practice within the meaning of P.L. 100-225. Individuals wishing to collect potsherds from a particular location within the NCA for traditional purposes would apply to the BLM for a special-use permit. After the location had been thoroughly documented and a reference collection of the pottery taken for permanent curation, and after consultations required under NHPA, the BLM could issue the permit for collection from the surface.

Signs

Antiquities signs would be posted in areas of active or anticipated vandalism, taking care not to draw unwarranted attention to undamaged sites. Under Alternative B, as many as 200 signs could be posted.

Access Easements & Consolidation of Ownership

In areas of major archeological or historical values within or adjacent to public land, the BLM would seek legal access easements across key parcels of private land. The agency would also attempt to consolidate ownership by purchase or exchange from willing sellers in these areas.

Cadastral Survey

The BLM would manage this function in the same way as discussed for Alternative A. A cadastral survey is needed to determine ownership of the Cebolla Canyon Schoolhouse.

Road Closure

Under Alternative B, no roads would be closed specifically to protect cultural resources.

Formal Monitoring

A program of formal, controlled photo-monitoring would be continued at the Dittert Site, Oak Tree Site and Arroyo Ruin, and new photo-monitoring would be established at the Pinole Site, The Citadel, Oak Tree Ruin, Armijo Canyon Homestead, Lobo Canyon Petroglyphs, Aldridge Petroglyphs, and other high-value or seriously threatened cultural resource properties. (The purpose of photo-monitoring is to systematically document changes in site condition and identify corrective actions.) To ensure that maintenance needs were met, the BLM would regularly monitor the condition of all stabilized sites and those with this potential.

Stabilization

The existing stabilization and erosion control projects at the Dittert Site, Oak Tree Ruin, Arroyo Ruin, Armijo Canyon Homestead, and Armijo Canyon Springhouse would be maintained. New erosion-control measures could be implemented at up to 25 additional sites. The measures outlined in the El Malpais *Stabilization Assessment of Selected Homesteads* (Gallagher & Goodall 1991) would be implemented, and major new stabilization projects would be undertaken at Stone House, Cebolla Canyon Schoolhouse (if found to be on public land), and other homesteads with standing structures. If new excavations exposed prehistoric architecture, the BLM would consider stabilizing the structures as well.

Stabilization and erosion-control measures would be allowed in wilderness, but only if unusual scientific values were threatened and no other reasonable alternative existed. Such activities would be subject to the "minimum tool" requirement and would not be allowed to degrade the area's overall wilderness characteristics.

Fire Suppression

All homesteads and other structures with standing wooden elements would be singled out as high-priority fire suppression zones, both within and outside of wilderness.

Special Designations

Under Alternative B, the BLM would place a higher priority on nominating deserving properties to the National Register of Historic Places. The area of the Dittert Site presently covered by National Register listing would be expanded, and other sites such as the Cebolla Canyon Community, The Citadel, and the Pinole Site would be nominated. The BLM would actively encourage addition of the Dittert Site to the Chacoan World Heritage Site listing.

Boundary Modifications

The BLM would recommend that the Breaks Non-NCA Unit (12,100 acres) be added to the NCA. This unit was recently acquired by the BLM and includes portions of the Armijo Canyon and Tank Canyon prehistoric communities. These lands and their cultural resources would receive a higher level of protection and would be managed more intensively as part of the NCA.

Public Interpretation

In addition to providing off-site interpretive measures such as brochures, exhibits, and other media, the BLM under Alternative B (Resource Use) would also encourage visitation and onsite interpretation at the Dittert Site, Ranger Station Reservoir, Pinole Site, The Citadel, Cebolla Canyon Community, Lobo Canyon Petroglyphs, and Aldridge Petroglyphs. Public interpretation would also be developed at up to six homesteads, including Armijo Canyon Homestead, Armijo Canyon Springhouse, Cebolla Canyon Schoolhouse (if found to be on public land), Stone House, and other suitable properties. The BLM would conduct frequent guided interpretive hikes to cultural resource sites.

Issue 8--Wildlife Habitat

In addition to maintaining existing habitats as described under Alternative A, the BLM's primary emphasis under Alternative B would be to increase the enhancement (quality and quantity) of wildlife habitats within the Planning Area. However, because of increased emphasis on recreational and other human uses (e.g., facility development), habitat enhancement could be limited in some geographic areas.

The BLM would undertake the following wildlife habitat projects to increase the enhancement of existing habitat quality and quantity. (Refer to Appendix P for descriptions of other typical projects that could be used: e.g., water developments, fences, vegetative manipulation.) Under Alternative B, the BLM would propose up to ten enhancement projects annually, generally in areas where limiting factors occurred (e.g., lack of water or appropriate vegetative habitat). Sikes Act funding would be used for projects wherever appropriate.

Prescribed Fire
& Wildland Fire Under Prescription

To support appropriate animal populations, the agency would use these two types of fire throughout the Planning Area in a balanced approach to maintain and/or enhance wildlife habitats in the desired vegetative condition. Each prescribed burn would range from 50 to 1,500 acres in size, with an average of 750 acres.

Prairie Dog Colony Enhancement Area

This project would use the south half of the North Pasture and the Head Pasture of the El Malpais Allotment (Breaks Unit) as an enhancement area of approximately 1,000 acres for a prairie dog colony. This region contains the largest known prairie dog colony within the Planning Area, and its enhancement would also help support two local special-status species (the burrowing owl and mountain plover). If the colony expanded to an appropriate size (about 200 acres), the area would also be a potential release site for the black-footed ferret, one of the most endangered mammals on earth. Additionally, every year the BLM receives numerous requests from the public for a location for releasing prairie dogs that have been displaced from residential development areas, mainly in Albuquerque and Santa Fe. Because of other conflicting uses, the agency does not have a release area. This project would provide such a location, as well as enhancing additional habitat for special-status species.

Wildlife Water Catchments

To help provide wildlife water in areas where it is limited, the BLM would install three catchments (with an inverted umbrella or "flying saucer" design) within the Cerro Brillante Unit (T. 6 N., R. 12 W., Sec. 31, SE¼; Sec. 33, NE¼; Sec. 35, NE¼). These catchments are specifically designed to support the antelope population within the area, although they would provide water for numerous other wildlife species. They would be funded through the Sikes Act Program.

Riparian Fencing

The BLM would fence a 1½-mile section of the perennial stream along Cebolla Canyon, below Cebolla Spring (T. 5 N., R. 10 W., Secs. 2 and 3). This is one of the few perennial streams that occur within the Planning Area; protection of these unique habitats is a BLM priority.

Reintroductions

As identified in Alternative A, the BLM would work with the NMDG&F and the FWS to conduct feasibility evaluations for reintroducing native wildlife and/or plant species within the Planning Area. The emphasis would be placed on special-status species.

Issue 9--Vegetation

Under Alternative B, the BLM would emphasize forest and woodland, livestock grazing, riparian, fire and watershed management techniques to achieve the vegetative objectives.

To meet woodland objectives, piñon/juniper thinning would be permitted. Areas of up to 100 acres at lower elevations where the Potential Natural Community was open savanna or grassland would be proposed for thinning. A variety of tree sizes and ages would be left. The ground cover from trees left after harvest would be between 10 and 20 percent.

Changes in livestock grazing management would be made to ensure that vegetative objectives were accomplished. The Cerro Brillante CRMP is planned for completion during 1998, and the El Malpais in 1999. If monitoring studies indicated that existing management plans should be revised, new plans would be developed and/or livestock grazing use would be reduced. The minimum livestock grazing rest period provided in the management plans would be May 15 to June 30 and July 1 to September 15 each year, with at least one pasture per allotment rested during each period. To facilitate rest from livestock grazing, the BLM would consider building new range improvements, waters and fences for grazing allotments with or without an AMP/ CRMP. A site-specific EA would be completed for any range improvements considered. AMPs would also include objectives and actions for forest and woodland, riparian, wildlife and watershed management.

To ensure progress toward fully functioning riparian areas, wet zones surrounding springs used by livestock would either be fenced to exclude these animals or receive regularly scheduled rest from such use. For either option, springs could be developed by piping the water away from the wet area. Springs not used for livestock water would remain unfenced and undeveloped.

Prescribed fires and wildland fires under prescription would be used to accomplish forest vegetative objectives by reducing piñon-juniper that has invaded or increased in ponderosa pine habitat. The BLM would employ up to five fires annually, each ranging from 50 to 1,500 acres in size.

Watershed management practices (e.g., structures and vegetative treatments) would be allowed under Alternative B. The BLM would control noxious weeds (e.g., knapweeds, bindweed, leafy spurge, thistles) by mechanical, chemical or biological means. A site-specific EA would be completed before any treatment.

Any needed erosion-control structures would be proposed in AMPs/CRMPs. Small structures would be the primary focus, but larger structures that would also provide water for livestock and wildlife would be considered.

Erosion-control structures would also be considered to protect cultural resource sites. Where possible, construction of these protective structures would be addresses in AMPs/CRMPs. However, if cultural resource sites were in immediate jeopardy, site-specific project plans would be prepared.

Issue 10--Boundary & Land Ownership Adjustments

The Planning Area includes 24,200 acres outside the NCA boundary. Another 17,100 acres lying outside the NCA boundary but contiguous to it are being considered as additions to the NCA.

Under Alternative B, the BLM would recommend to the Congress the following changes in the NCA boundary.

- Exclude 960 acres of Acoma Pueblo lands currently within the NCA boundary from the Spur Unit and Cebolla Wilderness. This would remove several parcels totalling 800 acres between NM 117 and the National Monument boundary, and 160 acres recently acquired by Acoma Pueblo within the Cebolla Wilderness (T. 7 N., R. 10 W., Sec. 12). These are adjacent to other Acoma lands, and are aboriginal, with recurring value to the Acoma people.
- Expand the NCA to include an additional 26,200 acres known as the Brazo and Breaks Non-NCA Units and the Continental Divide-AFO Unit (24,000 acres federal and 2,200 private--refer to Table 1-1 in Chapter 1, and Map 31). Acquire inholdings by exchange if owners are willing. These parcels are within Cibola County, and are contiguous to and a logical extension of the NCA. (Refer to Chapter 1 for a more detailed description of each parcel.)
- In addition to the priorities in the BLM's Land Protection Plan (1989), Alternative B would include two acquisition recommendations: a treadway for the CDNST (via easement, sale or exchange) in the Cerro Brillante-AFO Unit, if owners were willing; and a 160-acre parcel that includes an early historical ruin with interpretive

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potential (portions of T. 5 N., R. 11 W., Sec. 3 and T. 6 N., R. 11 W., Sec. 34).

- Recommend that the Congress amend the boundary of the Cebolla Wilderness to include portions of newly acquired, contiguous lands (an increase of 3,650 acres), and allow for the reengineering, repair and realignment of the cherry-stemmed Cebolla and Sand Canyon Roads to correct severe erosion problems affecting visitor safety (no net change in wilderness acreage). These additions, less the excluded 160 acres of Acoma lands (discussed above), would result in a net increase of 3,490 acres in the Cebolla Wilderness (refer to Map 26).

Pending Congressional action, the BLM would manage the Breaks and Brazo Non-NCA Units in accordance with the provisions of this plan. The agency would temporarily withdraw all public land within the proposed NCA expansion units from the public land and mineral laws.

Alternative C--Natural Processes

Under Alternative C, the Natural Processes Alternative, the BLM would minimize human activities in the Planning Area. In implementing this alternative, the agency would close a maximum number of roads and place restrictions on scientific investigations and other activities that would remove materials from the Planning Area. Developments such as interpretive signing, ruin stabilization, erosion control, trail development, and range and wildlife improvements would be minimized. Recreational use would be discouraged, grazing reduced, and no deliberate manipulation of vegetative communities would be attempted.

Issue 1--Recreation

Under Alternative C, the emphasis for recreation would be on dispersed opportunities, so few recreational developments would be proposed. The BLM would continue to evaluate potential opportunities for developed recreation on a case-by-case basis as part of project-level planning, and would develop or discourage them based on their impacts and fit with the goals of this alternative. However, opportunities would continue to exist for visitors to participate in activities such as camping, hiking, horseback riding, hunting, mountain and road biking, picnicking, sightseeing, back-country driving, wildlife watching, exploring and learning about historical and archaeological sites, caving, climbing, skiing, shooting, trapping, photography, pack trips and enjoying wilderness solitude. No formal indication would be offered of where or when these activities could be pursued.

The BLM would not promote camping, hiking, picnicking, and sightseeing for cultural or historical interest in the Planning Area, and would encourage them elsewhere. Visitors would be informed that these pursuits were available as dispersed activities, with no formal opportunities provided. No camping would be allowed at The Narrows.

As under the No Action Alternative, horse gates would be provided at The Narrows and Hole-in-the-Wall access points.

Through route designations and closures, the BLM would shift the ROS classes and recreational opportunities available toward semi-primitive, nonmotorized types. About 13 percent more roads would be closed under Alternative C than under the No Action Alternative (refer to Table 2-6 and Map 8). No areas would be identified for watchable wildlife opportunities.

Mountain biking opportunities would occur along roads designated as open in the Planning Area. The number of miles of open road would be decreased by 56 percent from the No Action Alternative. No additional developments would be proposed.

Approximately 200 miles of BLM-administered roads would be available for sightseeing, driving for pleasure, or back-country driving. No back country byways would be offered.

Visual Resource Management

Under Alternative C, the BLM would manage visual resources under the assigned VRM classes shown on Map 16. All public lands within the Planning Area would be assigned a VRM class (refer to Table 2-8). The BLM would place greater emphasis on preserving the natural appearance of the landscape by assigning the more restrictive Classes I and II to nearly all of the Planning Area. Under these two

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classes, human modifications to the characteristic landscape would be allowed only if they were substantially unnoticeable.

Implementing this alternative would amend the RMP to reflect the following changes in VRM classes. Class III for the Cerro Brillante and Neck Units would be changed to Class II. Class I for the Cerritos de Jaspe, Neck, Continental Divide, and Cerro Brillante Units would be amended to Class II. The Cebolla and West Malpais Wildernesses would continue to be managed under Class I, along with the 18,300-acre Chain of Craters WSA and an additional 9,340 acres proposed for addition to the Cebolla Wilderness. VRM Class II would be assigned to the recently acquired lands within the Brazo and Breaks Units. VRM Class III, which allows a moderate amount of visual change, would be assigned to only the 60 acres of public land around the Ranger Station on NM 117.

After evaluation, those facilities and roads not needed for managing and protecting the resources would be removed and the sites rehabilitated to benefit scenic resources. Few new facilities would be introduced into the landscape. To protect the viewshed along federal, state and county roads within the Planning Area, the BLM would seek scenic or conservation easements from willing private landowners.

Issue 2--Facility Development

Under Alternative C, the emphasis for recreation would be on dispersed opportunities. Few additional opportunities would be proposed, and facilities would be developed only where recreational activities exceeded the Limits of Acceptable Change (LAC--refer to Appendix D), to harden sites, or to redirect activities.

Although few new facilities would be proposed, they would be designed and constructed to appear consistent throughout the Planning Area, blending with the surrounding landscape and local architectural styles. More rustic, simpler facilities would be used, primarily for site and resource protection. Identification signs would be maintained at eight locations along roads entering the Planning Area (refer to Map 12).

No campground or amphitheater would be built in the Spur Unit, as proposed under Alternative B. The BLM would discourage use of The Narrows area, ceasing interpretation efforts, removing all developments and designating it for day use only with no camping allowed. The agency would encourage visitors to camp at dispersed sites using Leave No Trace and Tread Lightly practices.

No additional trails would be developed for hiking opportunities. Visitors would continue to use the informal trails along old roads such as those into the West Malpais Wilderness and Armijo Canyon, or the informal Narrows Rim Trail. The BLM would remove the trailhead sign for this trail, and would not develop nearby parking or horse facilities. Visitors would be encouraged to use trails outside the Planning Area. Social trails that exceeded the Limits of Acceptable Change would be closed, with the closures enforced (refer to Appendix D).

No recreational developments would be planned for the CDNST. The treadway would be constructed and easements acquired, but only the minimum required by the CDNST Plan (USDA, FS 1993). Any developments would be postponed until visitor use warranted and/or use exceeded the Limits of Acceptable Change for social trails and road pullouts.

Under Alternative C, the BLM would provide no additional developments for horseback riding, picnicking, watchable wildlife, sightseeing, driving for pleasure, or back-country driving. The horse and hiking trail access into the Cebolla Wilderness would remain, but no improvements would be made at the trailhead, nor would parking for horse facilities or hiking be installed. No additional byways would be proposed or developed, and the Chain of Craters Back Country Byway would be decommissioned.

No trails would be developed for mountain biking. As the Limits of Acceptable Change for mountain bike use were exceeded, any use would be discouraged. The BLM would encourage such use at locations outside the Planning Area.

No additional recreational or interpretive developments would be planned at any of the prehistoric and homestead sites. Neither would other cultural properties have recreational developments of any

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kind. The Dittert Site would be removed from guided tours, maps and public information developed in the future. Visitors would be discouraged from accessing the site or using it as a recreational opportunity, and would be directed to other sites outside the Planning Area.

Limited onsite interpretive facilities would be developed under Alternative C. Most if not all interpretation would occur through one-on-one contact with visitors, and printed brochures, exhibits, interpretive media, and publications at the Ranger Station. Brochures would emphasize the natural process occurring in the Planning Area.

Issue 3--Access & Transportation

To enhance the natural processes within the Planning Area, the BLM would close more public lands to motor vehicle access by reducing the number of routes available for public use. The closed lands would consist of 128,440 acres or 52 percent of the public land acres in the Planning Area, which would be under wilderness management. On the remaining 48 percent of the Planning Area, access would be limited to designated roads and trails (refer to Table 2-10). No lands would remain open or undesignated.

Under Alternative C, more roads would be closed than under any other alternative (refer to Table 2-11). These closures would reduce road density and decrease interference with natural processes; the BLM would then return these lands disturbed by vehicle use to resource production through natural and mechanical means. Vehicle use by the general public would be restricted to 199.7 miles (55 percent) of the inventoried BLM routes available under the No Action Alternative (Alternative A). The mileage of access routes authorized for administrative and grazing use would also be reduced. A total of 76 miles of state highways, U.S. Forest Service, county and private roads within the Planning Area would remain unaffected under this alternative, as would 18.4 miles of BLM arterial routes. A greater portion of the Planning Area would be available for nonmotorized and non-mechanized means of access.

Vehicle use would be limited to the designated routes shown on Map 20, unless otherwise authorized. Approximately 119 miles of vehicle routes in the NCA and about 14 outside the NCA but within the Planning Area would be closed. The greatest quantity of roads would be closed in the Brazo (19.1 miles), Cerritos de Jaspe (12 miles), Cerro Brillante (21 miles), Continental Divide (17.1 miles) and Chain of Craters Units (39.2 miles). Another 3.1 miles of roads would be closed in the Spur Unit, .3 mile in the Neck, and 7.3 miles in the Breaks. Of the routes within the Planning Area but outside the NCA, 8.7 miles would be closed in the Breaks Non-NCA Unit and 5.3 in the Brazo Non-NCA Unit. An additional 23.7 miles of local routes would be added to the existing 6.3 miles; these would be restricted to authorized use only.

The BLM would continue to allow cross-country access in the Planning Area by nonmotorized and nonmechanical means (e.g., horseback and foot). However, because of terrain and vegetation conditions, the agency assumes that most of this type of access would be concentrated on existing or abandoned back-country roads and the few existing trails. Mechanical transport (i.e., mountain and road bikes) would be prohibited from entering the wildernesses and could be used only on designated vehicle routes. Motorized and mechanical access for traditional American Indian cultural practices would also be restricted to designated routes unless otherwise authorized.

Maintenance would be concentrated on an as-needed or emergency basis over fewer miles of road, depending on available funding. The BLM would take measures to discourage use and eliminate evidence of closed roads, using onsite materials (e.g., slash piles, rocks), revegetating through natural or mechanical means, fencing, signing, other barriers, or a combination of these treatments.

The agency would develop maps and brochures to inform the public of the access opportunities and restrictions. The agency would use and maintain signs to mark designated routes and closures.

Issue 4--Wilderness Management (Cebolla & West Malpais)

The BLM would recommend an adjustment to the Cebolla Wilderness boundary under Alternative C through the inclusion of an additional 9,340 acres of contiguous public lands (refer to the discussion under Issue 5 below). At the request of Acoma Pueblo, the

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BLM would also recommend to the Congress that the boundary of this wilderness be amended to exclude 160 acres of private land recently acquired by the pueblo. Located in Sec. 12, T. 7 N., R. 10 W. along the perimeter boundary of the wilderness (refer to Map 27), these lands are aboriginal, have recurring value to the Acomas, and are adjacent to other Acoma lands that were excluded from the wilderness when the existing boundary was defined.

The BLM would continue to concentrate on wilderness signing, prevention of unauthorized vehicle intrusions, patrolling and monitoring of uses for compliance, and educating the public through personal contact and interpretive materials. Management of wilderness under Alternative C would emphasize the preservation of naturalness and natural processes, with less focus on use and enjoyment for primitive and unconfined recreational activities.

The BLM and volunteers would continue to patrol the areas at least once a month when they were accessible to the public. More frequent patrols would be made when conditions warranted. Patrolling would be used to discourage violations, gather information about area resources and uses, and inform visitors about the resources and appropriate uses of designated wilderness.

The public could continue to use the areas for primitive types of recreation that did not require the use of motor vehicles, motorized equipment or other forms of mechanical transport such as mountain bikes. However, such use would not be encouraged through brochures identifying available opportunities. Information and maps would be available upon request; these would highlight the wilderness resource, the risks associated with use, and the regulations governing such use.

The existing recreational facilities and trails on the wilderness perimeter would remain in place for continued use and resource protection. La Ventana Natural Arch, The Narrows, and Armijo Canyon would continue to serve as primary access points to the Cebolla Wilderness. The Cebolla Canyon Road (No. 2003) that splits the Cebolla Wilderness, and the Sand Canyon Road (a dead-end, cherry-stemmed road) would also provide access opportunities. However, the natural erosion process would be allowed to close these two roads over the long term. Rock cairns and other signs marking the Narrows Rim Trail, which extends 3.5 miles into the Cebolla Wilderness, would be removed and the trail reclaimed.

For the West Malpais Wilderness, the trailhead at the end of the cherry- stemmed road from CR 42 would continue to serve as the primary access point. Another access point would continue to be a trail that follows an old vehicle route (authorized for use by the grazing operator) and leading into the Hole-in-the-Wall, a major attraction of this wilderness.

Except at La Ventana Natural Arch, where permanent restrooms and a paved parking lot would continue to be provided, other access facilities would remain rustic in nature. Their primary purpose would be resource protection, not user convenience or direction. Onsite information would remain limited. Signs would be placed around the wilderness perimeters to identify the boundaries and some regulations governing area use. Additional information and education would be provided through personal contact by BLM staff and volunteers when users were encountered onsite during patrols, and at the Ranger Station on NM 117, BLM offices in Grants and Albuquerque.

As authorized in accordance with the Wilderness Act and P.L. 100-225, motorized and mechanical access would be allowed to non-federal inholdings and for livestock grazing operations over 5.5 miles of routes in the Cebolla Wilderness and 17.8 miles in the West Malpais Wilderness. This access and use associated with livestock grazing would continue under the conditions set in the BLM's RIM Plans (1990) and AMPs/CRMPS for the individual allotments overlapping these two areas. Access to private inholdings would continue over BLM-selected routes that would cause the least impact to wilderness character while serving the purposes for which the land was held or used.

Traditional American Indian cultural practices would be allowed to continue in the two areas in a manner consistent with the intent of the Wilderness Act. Motor vehicle access to the perimeter of each wilderness would be allowed, but such use inside the wilderness would be prohibited, unless the BLM has granted prior authorization after consultation and evaluation. When the BLM authorized such use of motorized vehicles by American Indians, stipulations to control impairment of wilderness character would be met. Upon request, the BLM would temporarily close the smallest practicable area for the minimum period needed to accommodate American Indian activities.

In most instances, cultural and historical resources would be subject to the forces of nature in the same manner as other wilderness resources. Stabilization and scientific studies of selected cultural resources and historical sites within the two wildernesses would continue as required to meet the BLM's protection and preservation mandates. Research would be authorized if it could be carried out in an unobtrusive manner by methods compatible with preserving wilderness character.

Wildlife habitat management would continue to be guided by the BLM's Wilderness Management Policy. Hunting and trapping would be permitted, subject to applicable state and federal laws and regulations. Use and maintenance of the one wildlife exclosure and the one water catchment (inverted umbrella) in West Malpais would be allowed to continue (refer to Chapter 3 for a list). They would be maintained using the "minimum tool" concept.

Vegetation treatments would be considered on a case-by-case basis in accordance with guidance provided in the BLM's Wilderness Management Policy. Fires would be controlled to prevent their spread to areas outside the wilderness, the loss of human life or property. Fire suppression methods would be those that would cause the minimum adverse impact to wilderness character.

The BLM would continue to seek acquisition of approximately 300 acres in Cebolla and 500 acres in West Malpais of surface inholdings and subsurface interests from willing sellers. Priority would be given to those lands that were undeveloped, or where use would pose a threat to wilderness character. These lands would be managed as wilderness when acquired.

Issue 5--Wilderness Suitability

Chain of Craters WSA

Under Alternative C, the entire WSA would be recommended as suitable for wilderness designation. The resources of the 18,300-acre Chain of Craters would be managed to maximize wilderness values, including solitude, naturalness, and opportunities for primitive and unconfined recreation.

The wilderness would be closed to unauthorized motorized and mechanized use. Approximately 47 miles of vehicular routes within the wilderness would be closed to the public. About 1,800 acres along the perimeter of the Chain of Craters would be a roaded natural area, 1,000 acres would be semi-primitive motorized, and about 15,500 acres would be semi-primitive, nonmotorized wilderness. Authorized vehicle access routes would be established based on the "minimum tool" concept and emergency needs for maintaining livestock grazing facilities.

Grazing operations in the Chain of Craters Wilderness would continue to use the existing 2,485 AUM of forage per year, unless monitoring of forage condition and production indicated a need for change. Livestock operators would manage without using motorized equipment, except by permit for facilities maintenance identified in AMPs/CRMPs or RIM Plans.

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Under the Wilderness Act, the BLM would deny permission for motorized access into the Chain of Craters for traditional American Indian cultural purposes. Such access would require specific legislation by the Congress.

As wilderness, the Chain of Craters would offer high potential for recreational use. Suitable activities would include sightseeing, day hiking, backpacking, camping, horseback riding, birdwatching, landscape and nature photography, observation of geologic phenomena, and hunting. (Note: A proposal to route approximately 9 miles of the CDNST through the WSA has been analyzed as part of a multi-agency plan--USDA, FS 1993).

The BLM would manage the visual resources within the WSA as Class I. Any change in the basic landscape elements (form, line, color, or texture) caused by a management activity would not be evident in the characteristic landscape.

Lands Contiguous to the Cebolla Wilderness

Under Alternative C, the BLM would recommend approximately 9,340 acres of the 10,380 acres studied under Section 202 of FLPMA as an addition to the existing Cebolla Wilderness (refer to Map 27). The wilderness boundary would be amended to include the contiguous acres.

Until those lands recommended as suitable were either designated or released by the Congress, they would be managed under the Interim Management Policy except as it applies to minerals. The agency would manage the 1,040 acres recommended as nonsuitable for designation under the management prescriptions identified in this alternative and applicable to this area.

Issue 6--American Indian Uses & Traditional Cultural Practices

Under Alternative C, the BLM would take actions to resolve this issue in the same way as under Alternative A.

Issue 7--Cultural Resources

Under the Natural Processes Alternative, the BLM would seek to eliminate human impacts, as much as possible, while allowing natural processes to take their course. This philosophy is consistent with Navajo beliefs that disturbance of places associated with death can be very dangerous. It is also consistent with traditional Pueblo beliefs that recognize prehistoric sites as ancestral places that should be left alone, subject to natural processes. Therefore under Alternative C, the BLM would minimize management actions for individual cultural properties.

The scientific values inherent in the cultural resources of the Planning Area would benefit from general management practices such as reduced public access and improved grazing management. However, intrusive management practices for particular properties (such as signing, stabilization, and erosion control) would be minimized, which could result in site damage. Severe restrictions would be placed on current scientific use that would physically alter the cultural resources, so some information could be lost. The BLM's proactive management of cultural resources would focus on other lands managed by the Albuquerque Field Office.

Use Allocation

Under Alternative C, cultural resources that met the definition of "isolated manifestation" would be allocated to the Discharged Use category if they have been adequately recorded. All other PaleoIndian, Archaic, and Pueblo sites would be managed for public value and allocated to sociocultural use. In this case, such use would imply recognizing these sites as ancestral Pueblo places and deferring to the wishes of Acoma, Zuni, and other interested pueblos for their management.

Prehistoric sites could be reallocated to scientific use or conservation for future use on a case-by-case basis, and only with the concurrence of all pueblos who recognize close ties to these properties. This would normally imply using non-intrusive measures to protect the sites from human impacts, and noninterference with natural processes.

All historical Navajo sites would also be allocated to sociocultural use and treated in a similar manner. Any reallocation would require concurrence from the Navajo Tribe and any local chapters who recognize close ties to the properties. All Anglo and/or Hispanic sites would be managed for their information potential and allocated to scientific use.

Compliance with the National Historic Preservation Act

Few BLM-authorized development projects would be anticipated under Alternative C, but if prehistoric cultural resources were found within areas of potential impact, avoidance rather than data recovery would be the strongly preferred mitigation measure. Any proposed data recovery affecting Pueblo or Navajo sites would require reallocation of the site to scientific use. Although such a reallocation would be within the scope of this alternative, it would require concurrence from the interested tribes as described above.

Inventory & Baseline Condition

No inventories to identify vulnerable sites and establish baseline condition would be undertaken.

Scientific Investigation

Under Alternative C, scientific investigation of Anglo/Hispanic historical sites, and investigations at other sites that did not physically alter them would be allowed under the conditions described above for Alternative A. However, in general, investigations that would physically alter PaleoIndian, Archaic, Pueblo, or Navajo sites would be prohibited. If cultural resources were threatened and/or were of unusual scientific importance, exceptions would be considered, but would only be permitted with the concurrence of the concerned American Indian groups as described above. Under these conditions, intensive scientific investigations would not likely occur during the life of this plan.

No extractive activities would be permitted within wilderness. Activities that would result in long- or short-term impacts to visual resources, vegetation, or other resources would be prohibited.

Pottery Collection

Under Alternative C, the BLM would manage this activity in the same way as under Alternative A.

Signs

No antiquities signs would be posted.

Access Easements & Consolidation of Ownership

No special efforts would be made to consolidate ownership of vulnerable archeological properties, and access easements would only be sought where needed for law enforcement.

Road Closure

Vehicular access to the Planning Area would be most restricted under Alternative C, so no special area closures would be proposed for cultural resources.

Formal Monitoring

Aside from patrols by Law Enforcement Rangers intended to prevent or prosecute violators of ARPA, the BLM would conduct no formal monitoring of cultural resources.

Stabilization

Deterioration of cultural resources is considered to be a natural process consistent with management under Alternative C. Remedial measures such as stabilization and erosion control would be proposed only if extraordinary scientific values were threatened, and would be undertaken only after gaining the concurrence of tribes who recognize close ties to the properties. Existing stabilization and erosion-control projects are intended primarily to preserve the potential of the sites for public use, and would not be maintained under this alternative.

No stabilization and erosion control measures would be allowed within wilderness.

Fire Suppression

No homesteads or other historical properties would be identified for protection from fire.

Special Designations

No National Register or other special designations would be pursued.

Boundary Modifications

Boundary modifications proposed under Alternative C (refer to Issue 10 below) would expand the NCA, adding portions of the Breaks Non-NCA and Tank Canyon SFO Units that contain highly valuable cultural resources.

Public Interpretation

No onsite interpretation of cultural resources would occur under Alternative C, nor would the public be encouraged to visit any of the cultural resources in the Planning Area. Interpretation and public education would rely almost entirely on offsite measures such as exhibits at the Ranger Station. Visitors on BLM-supervised interpretive hikes would visit cultural resources rarely, and only after close consultation with American Indian groups who were concerned about the properties.

Issue 8--Wildlife Habitat

Under Alternative C, the primary emphasis would be to let natural processes maintain the existing wildlife habitats, so the BLM would undertake no maintenance or enhancement projects. However, maintenance of existing projects and habitats needed to support special-status species would still remain a priority.

No new developments (e.g., water facilities, vegetative manipulations, fences) would be undertaken, except where necessary to support the maintenance of habitat for special-status species. Wildland fires under prescription would be used throughout the Planning Area to maintain habitats in a natural vegetative condition and support existing populations. The fire history of the Planning Area shows a broad variability in the number and size of wildfires. For evaluating impacts, it is estimated that the average number of acres that would be burned from wildland fires under prescription would be 1,000 acres annually.

The BLM would work with the NMDG&F and the FWS to conduct feasibility evaluations for reintroducing native wildlife and/or plant, special-status species within the Planning Area. Presently only one species (desert bighorn sheep) has been identified for possible reintroduction within the vicinity. No reintroduction of species other than those with special status would occur under Alternative C.

Issue 9--Vegetation

Under Alternative C, livestock grazing and fire management would be emphasized to meet vegetative objectives. No tree thinning would be permitted to meet forest or woodland vegetative objectives.

Changes in livestock grazing management would be made to ensure it was providing for the accomplishment of vegetative objectives. AMPs/CRMPs would continue to include such objectives. The Cerro Brillante CRMP is scheduled for completion in 1998 and the El Malpais CRMP in 1999. Existing plans for the Los Cerros, Techado Mesa and Los Pilares Allotments would be amended to include vegetative objectives, and the minimum rest periods from livestock grazing use. The minimum livestock grazing rest period would be yearlong for at least one pasture in each allotment. No new range improvements would be developed. AMPs would include objectives and prescriptions for fire, wildlife and watershed management. If monitoring studies indicated the need, existing plans would be revised, new plans developed, and/or livestock grazing use reduced.

For riparian management, no new spring exclosure would be constructed. The wet areas around springs used by livestock would receive regularly scheduled rest from livestock grazing. Springs not used by livestock would remain unfenced and undeveloped.

Prescribed fires would not be used under Alternative C, except where needed for fuel management. Wildland fires under prescription would be used to the greatest extent possible to provide accomplishment of woodland and forest vegetative objectives. Up to three of these fires, ranging in size from 50 to 1,000 acres each, would be allowed to burn annually under specified conditions.

For watershed, no structures would be built. However, the treatment of noxious weeds (e.g., knapweeds, bindweed, leafy spurge, thistles) would be allowed under Alternative C by mechanical or biological means. The BLM would complete site-specific EAs before treating any noxious weeds.

Issue 10--Boundary & Land Tenure Adjustments

The Planning Area includes 24,200 acres outside the NCA boundary (non-NCA units). A total of 17,100 acres outside the NCA boundary but contiguous to it would also be considered as additions to the NCA (refer to Table 1-1 in Chapter 1 and Map 32). Under Alternative C, the BLM would recommend that the Congress amend the NCA boundary to accomplish the following.

- Exclude 960 acres of Acoma Pueblo lands currently within the NCA from the Spur Unit and Cebolla Wilderness. This would include several parcels totalling 800 acres between NM 117 and the National Monument boundary, and 160 acres within the Cebolla Wilderness (T. 7 N., R. 10 W., Sec. 12) recently acquired by Acoma Pueblo. This latter parcel, which is adjacent to other Acoma lands, consists of aboriginal lands that have recurring value to the Acoma people.

- Expand the NCA to include 41,300 acres in the Breaks Non-NCA, Brazo Non-NCA, Continental Divide-AFO, Tank Canyon-SFO, and Techado Mesa-SFO Units (38,900 acres federal and 2,400 acres private). (Refer to Chapter 1 for a more detailed description of each parcel.) These parcels are within Cibola and Catron Counties, and are contiguous to and a logical extension of the NCA. The BLM would acquire inholdings if owners were willing, with exchange being the preferred acquisition method.

- The BLM would add two acquisition recommendations: (1) a treadway for the CDNST by easement, exchange or sale in the Cerro Brillante-AFO Unit, if owners were willing; and (2) a 160-acre parcel that includes an early historical ruin with interpretive potential (portions of T. 5 N., R. 11 W., Sec. 3 and T. 6 N., R. 11 W., Sec. 34). Other acquisition recommendations in the Land Protection Plan (USDI, BLM 1989) would remain in effect.

- Modify the boundary of the Cebolla Wilderness to include portions of newly acquired lands contiguous to the current wilderness boundary (an increase of 9,340 acres). This change, less the 160 acres of Acoma lands excluded, would result in a net addition of 9,180 acres to the Cebolla Wilderness (refer to Map 27).

Pending decisions from the Congress, the BLM would manage the Breaks and Brazo Non-NCA Units in accordance with provisions of this plan. The Continental Divide-AFO Unit would be managed under the Rio Puerco RMP. The Techado Mesa-SFO and Tank Canyon-SFO Units would continue to be managed under the Socorro RMP. The BLM would issue a temporary withdrawal from the public land and minerals laws for all public lands within the non-NCA units.

Alternative D--Balanced Management

Alternative D is the BLM's Preferred Alternative. Under this alternative, the BLM would strike a management balance by combining actions selected from the alternatives outlined above.

Issue 1--Recreation

Under Alternative D, the emphasis for recreation would be on a combination of developed and dispersed recreational opportunities. The semi-primitive motorized and semi-primitive nonmotorized ROS classes would be applied to larger areas as shown on Map 9 and in Table 2-6. The BLM would reduce the density of vehicle routes in the Planning Area and limit vehicle travel to designated routes.

Within the ROS settings provided under this alternative, users could participate in such activities as camping, hiking, horseback riding, hunting, mountain biking, picnicking, sightseeing, back-country driving, wildlife watching, and exploring and learning about historical and archaeological sites. Recreational activities of interest to smaller populations such as caving, climbing, skiing, shooting, trapping, photography, pack trips, enjoying wilderness solitude and road biking would continue to be offered; however, the BLM would make no formal identification of where or when these opportunities were available.

Camping would be offered at one BLM developed campground and in dispersed sites throughout the Planning Area. No camping would be allowed at The Narrows.

The BLM would establish up to 10 additional hiking trails in the Planning Area, for a total of up 15 trails with a length of approximately 57 miles. The expanded trail system would provide improved access opportunities to such sites as the Lobo Canyon Petroglyphs, one or two homesteads, Cerro Americano, La Rendija and the historical schoolhouse site in the West Malpais Wilderness. The closure of 83.4 miles of vehicle routes in the Planning Area would also create opportunities for visitors to use them as informal hiking trails without vehicle conflicts.

For the convenience of horseback riders in the Planning Area, the BLM would provide facilities. The Narrows would be one location, along with the Armijo Canyon area (for access to the Cebolla Wilderness, not the archaeological site), Hole-in-the-Wall (for access to the West Malpais Wilderness), and Cerro Brillante (for access to the Chain of Craters).

The BLM would close roads to increase the isolation in the Planning Area for animals and hunters.

The agency would continue to allow mountain bike use of the Planning Area on those lands and designated travel routes outside wilderness, especially promoting routes in the Chain of Craters, Cerritos de Jaspe and Brazo Units. Approximately 130.7 miles of designated vehicle routes would be available for such use in these three units, providing a variety of experiences and levels of difficulty. These routes are not as heavily traveled by motor vehicles as some others in the Planning Area and would provide a system of loop trails. (Note: The Chain of Craters would be promoted for such use only if the Congress released the area from wilderness review, not while it continued in WSA status.)

Picnicking opportunities would be provided at the south end of The Narrows through facility development, and would also be encouraged as a dispersed activity. Approximately 273 miles of BLM-designated travel routes would be available for sightseeing, driving for pleasure, or back-country driving, including designated Back Country Byways.

In addition to the points of interest listed under the No Action Alternative, the following would provide opportunities for those interested in cultural or historical properties: the Cebolla Canyon Complex, Lobo Canyon Petroglyphs, and possibly the Cebolla Canyon Schoolhouse or other deserving properties.

Wildlife viewing opportunities would be identified along as many as eight stretches of road in the NCA (refer to Map 13). The BLM would provide interpretive material and signs to enhance the viewing experience.

Visual Resource Management

Under Alternative D, the BLM would manage visual resources on all public lands within the Planning Area under the assigned VRM classes shown on Map 17 and in Table 2-8. All public lands within designated wilderness would be managed under VRM Class I objectives, with most of the remaining public lands under the Class II objectives. (In Class II areas, management activities would be visible but should not attract the attention of the casual observer.) On 60 acres surrounding the Ranger Station, the BLM would assign VRM Class III, which would allow a moderate amount of visual change.

Objectives for managing visual resources on 14,050 acres within the southwest corner of the Cerro Brillante Unit and the north half of the Neck Unit would be changed from Class III to Class II. The Class I objectives within the Cerritos de Jaspe, Neck, Continental Divide, and Cerro Brillante Units would be amended to slightly less restrictive Class II objectives. This plan would amend the Rio Puerco RMP to reflect these changes in VRM classes.

For analysis purposes, the BLM assumes that the Congress would expand the Cebolla Wilderness by 3,930 acres, and not designate the 18,300-acre Chain of Craters as wilderness. The BLM would amend the RMP to apply VRM Class I objectives within the modified Cebolla Wilderness boundaries. The agency would manage the Chain of Craters Unit under VRM Class II objectives.

The recently acquired lands within the Brazo and Breaks Non-NCA Units would be assigned VRM Class II through this plan amendment. To protect the viewshed along federal, state and county roads within the Planning Area, the BLM would seek scenic or conservation easements from willing private landowners.

Issue 2--Facility Development

Under the Preferred Alternative, the BLM would provide a limited number of developed recreational facilities at a modest number of selected sites, and would seek to disperse visitors to other parts of the Planning Area. Facility development would occur after the El Malpais Plan was approved, through project-level analysis.

The agency would develop a campground within approximately 8 acres of the Spur Unit to accommodate camping on the east side of the Planning Area (refer to Map 13). The exact location would be decided after cultural surveys, T&E surveys and site investigations were completed. The campground would provide up to 20 single-family units with leveled parking spurs large enough to handle small self-contained RVs, vehicle campers or tent campers. One unit would be built for multi-family or group camping with appropriate parking. Two vault toilets, tables, and cooking facilities would be constructed within the campground and, if possible, drinking water would be provided.

At a location within a 5-minute walk of the campground, the BLM would build an amphitheater designed to hold about 50 people. Evening programs would occur regularly during the summer. To provide visitors with exercise and direct use for resource protection, the agency would build a loop trail near the campground. Vehicle access to the campground from NM 117 would be improved by upgrading the existing dirt road and surfacing it for all-weather use.

The BLM would provide approximately 57 miles of established trail to distribute visitors and provide resource protection under Alternative D, as under Alternative B (refer to Maps 11 and 13). Other trails at selected monitoring locations such as La Rendija, Cerro Rendija, and Chain of Craters would not be developed until established LAC standards for social trails were exceeded (refer to Appendix D).

Improvements to the Narrows Rim Trail would be the same as those described under Alternative B, except the parking area would be graveled and designed for up to 15 vehicles. Horseback access to the Cebolla Wilderness would continue to be provided at this location. (Refer to Figure 2-d for a conceptual design of these facility developments.) Up to three wayside exhibits would be located at this rustic trailhead or near the picnic area.

To serve the informal Hole-in-the-Wall Trail leading into the West Malpais Wilderness, the BLM would build horse facilities, a primitive trailhead, and a graveled parking area for up to 10 vehicles. Existing vehicle access to the trailhead would be improved. (Refer to Figure 2-e for a conceptual design of these developments.)

The agency would construct two rustic-style trailheads, one each at Cerro Americano and Cerro Brillante, for the CDNST. Each trailhead would include up to two wayside exhibits (to include watchable wildlife information at Cerro Americano), and a gravel parking area for up to 20 vehicles. At the Cerro Brillante trailhead, facilities for horse use would be provided. At Cerro Americano, facilities would accommodate mountain bike use. (Refer to Figures 2-e and 2-g for the possible design and layout of these developments.) Where feasible, the BLM would develop and identify water sources for CDNST hikers.

Mountain bike developments would be the same as those described under Alternative B. The travel routes available for mountain bike use would not be marked as trails until established LAC standards for social trails were exceeded.

The Narrows would be the only site developed for picnicking. It would be designated as a day-use-only site for parking and hiking in the Cebolla Wilderness. Recreational developments at the south end of The Narrows would include a picnic area with up to 10 units, parking, drinking water (if possible), graveled access, vault toilets, and up to three wayside exhibits. (Figure 2-d shows a conceptual design of these developments.)

The BLM would designate two new Back Country Byways, the NM 117-CR 42-NM 53 loop drive, and a route in the Brazo Unit. Under Alternative D,

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these developments would be the same as those discussed above under Alternative B. The agency would work with partners to purchase and install up to four signs and one or two kiosks for each byway (refer to Map 13). Signs typically measure 3 feet tall by 5 feet wide, with a total height of 6 feet including support posts. (The layout of a typical kiosk is shown in Figure 2-f.)

Primitive trailheads would be developed for the following cultural/historical properties as time, staff, and budget allowed: the Lobo Canyon Petroglyphs (rather than other rock sites), the Cebolla Canyon Schoolhouse, and other deserving properties as needed to distribute visitor use. For the Reservoir, the Ranger Station and parking lot would serve as the trailhead, with the approved Nature Trail for access. Facilities would be the same as called for under Alternative B (an all-weather graveled access road, parking and a trailhead kiosk). However, the parking areas would be designed for up to eight vehicles instead of ten.

One or two homesteads from those described under Alternative B would be developed for public use. To provide for public access, the BLM would build one or two primitive trailheads, including a parking area for four to six vehicles. (Figure 2-g shows a possible design of these developments.) Interpretive wayside exhibits would be developed for up to three sites and/or homesteads, along with brochures and/or trail guides keyed to markers. The BLM would conduct special hikes and programs for up to 200 people per year to these features.

When warranted by significant visitation, the agency would install visitor registration boxes at selected archaeological properties (refer to the list under Alternative B). No additional developments would be planned at these sites. Visitation would be encouraged at the Lobo Canyon Petroglyphs rather than at other sites.

Recreational and facility developments at the Dittert Site would be the same as those called for under Alternative B, except the parking area and access road would be graveled, rather than paved; the parking would be for up to 20 vehicles; and a rustic trailhead would be constructed for site and wilderness access. Horse facilities would be built to provide access to the Cebolla Wilderness, not the Dittert Site. (Figure 2-i shows a conceptual design for these facilities.) Dittert Site interpretation would include up to two wayside exhibits, a trail guide, and guided hikes for public and school groups (50 to 200 people per year). This would also be a trailhead and access for the Cebolla Wilderness.

Entry identification signs would be maintained at up to six locations along roads into the Planning Area. Additional signs would be posted as indicated by public comment or to eliminate confusion about land status. (The dimensions of these signs would be the same as the Back Country Byway signs discussed above.)

The BLM would construct pullouts and develop interpretive kiosks at up to three NCA entry locations, the junction of NM 117 and CR 42, the western entrance along NM 53, and the first public land encountered along NM 53 (Sec. 16, T. 9 N., R. 10 W.) Watchable wildlife signs would be installed along CR 42, NM 53, and NM 117 to promote this recreational opportunity.

The BLM would design and build new facilities to achieve a consistent appearance throughout the Planning Area, and to blend with the surrounding landscape and local architectural styles. VRM class objectives would be set to accommodate a combination of developments, with higher levels at selected areas for user comfort and convenience, and rustic and rudimentary facilities elsewhere. Facility design and construction would conform to the assigned VRM class and be consistent with this alternative's theme of balanced management.

Interpretation would occur through one-on-one contact with visitors (public programs, guided hikes, and Ranger Station contacts); printed brochures, exhibits, interpretive media and publications at the Ranger Station; wayside exhibit panels, self-guided trails with interpretive signs, kiosks, and informational signs.

Issue 3--Access & Transportation

To enhance natural processes, motor vehicle area designations within the Planning Area would be "limited" and "closed." Except in designated wilderness, which would increase under this alternative, vehicle travel in the majority of the Planning Area (143,270

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acres or 58 percent) would be limited to designated routes as shown in Table 2-10. (The "limited" designation would include lands not previously addresses in the RMP and those designated as open through the RMP.) Those lands designated as closed (42 percent of the Planning Area) would be wilderness. No lands would remain open or undesignated.

Under Alternative D, both road closures and route designations would be implemented. Approximately 273.1 miles of inventoried local and collector routes (75 percent) would be designated as open to the general public for motor vehicle use (refer to Map 21 and Table 2-11). Another 83.4 miles of routes would be closed.

A total of 76 miles of state highways, U.S. Forest Service, county and private roads within the Planning Area would remain open under this alternative, as would 18.4 miles of BLM arterial roads. Authorized vehicles could continue to use 6.3 miles of routes on public lands outside wilderness and 23.3 miles of routes inside wilderness.

Approximately 75 miles of local roads within the NCA and 9 miles outside the NCA but in the Planning Area would be closed to vehicle use. The BLM would reclaim these roads through natural and mechanical treatment to bring them back into resource production. Of the roads closed within the NCA, 14 miles would be within the Chain of Craters, 3.1 miles in the Spur, 15.3 miles in the Continental Divide, 9.2 miles in the Cerritos de Jaspe, 7.3 miles in the Breaks, 12 miles in Cerro Brillante, and 14 miles in the Brazo Unit. Of the roads outside the NCA, 5.4 miles within the Brazo Non-NCA Unit and 3.2 miles within the Breaks Non-NCA Unit would be closed. The closed routes would be those abandoned or not showing signs of regular or continuous use at the time of the most recent inventory (1996), duplicating other vehicle routes serving the area, causing resource damage, or serving no apparent need.

Cross-country access by nonmotorized and nonmechanical means (e.g., on horseback and by foot) would be allowed to continue in the Planning Area. However, because of terrain and vegetation conditions, it is assumed that most of this type of access would be concentrated on existing or abandoned back-country roads and the few existing trails. Mechanical transport (i.e., mountain and road bikes) would be prohibited in wilderness and restricted to designated vehicle routes. Motorized and mechanical access for traditional American Indian cultural practices would also be restricted to designated routes unless otherwise authorized.

The BLM would develop maps, brochures and signs to inform the public of the access opportunities and restrictions. Signs marking designated routes and closures would be posted and maintained. Natural and mechanical treatments (described under Alternative B) would be used to control access and discourage vehicle use on closed, unauthorized vehicle routes.

Maintenance and improvement would be concentrated on the designated arterial and collector routes. Local routes would remain rough and impassable at times.

Issue 4--Wilderness Management (Cebolla & West Malpais)

If the Congress accepted the BLM's recommendation and passed appropriate legislation, the Cebolla Wilderness would be expanded to include 3,930 acres of contiguous lands. At the request of Acoma Pueblo, the BLM would also recommend to the Congress that the boundary of this wilderness be amended to exclude 160 acres of recently acquired, formerly private lands. Located in Sec. 12, T. 7 N., R. 10 W., along the boundary of the wilderness (refer to Map 28), these are aboriginal lands that are adjacent to other Acoma lands and have recurring value to their people. Any other adjustment in the amount of public lands under BLM wilderness management in either Cebolla (300 acres) or West Malpais (500 acres) would result from the acquisition of inholdings from willing sellers.

Management efforts would continue to be concentrated on signing, preventing unauthorized vehicle intrusions, patrolling and monitoring uses for compliance, and educating the public through personal contact, interpretive and educational materials. The BLM's emphasis under Alternative D would be on providing opportunities for users to experience solitude or take part in primitive and unconfined types of recreation, without diminishing the areas' wilderness character.

The BLM would continue to patrol the areas at least once a month when accessible to the public, with more frequent patrols during spring through fall when use was greater. Patrolling would be used to deter violations, gather information about area resources and uses, and inform users about the resources and appropriate use of designated wilderness.

Users could continue to pursue primitive types of recreation that did not require the use of motor vehicles, motorized equipment or other forms of mechanical transport. The BLM would continue to encourage such use through publishing maps and brochures identifying the opportunities available within these areas.

Along with trail improvements for recreation users and resource protection, the existing recreational facilities on the wilderness perimeters would remain in place. La Ventana Natural Arch, The Narrows, and Armijo Canyon would continue to serve as primary access points to the Cebolla Wilderness. The BLM would improve facilities at Armijo Canyon and The Narrows to accommodate visitors and help direct wilderness access. The Cebolla Canyon Road (No. 2003, which splits the Cebolla Wilderness), and the Sand Canyon Road (a dead-end, cherry-stemmed road) also would provide opportunities for users to gain access to the Cebolla Wilderness. The BLM would maintain these roads more frequently to reduce erosion and improve access opportunities. From the Narrows Recreation Site, the BLM would improve markers for the Rim Trail that extends 3.5 miles into the wilderness to direct visitor use.

For the West Malpais Wilderness, the trailhead at the end of the cherry-stemmed road from CR 42 would continue to serve as the primary access point. The BLM would improve access to the trailhead and the trailhead itself to accommodate visitors and horse use. The agency would continue to identify for users a trail that follows a vehicle route leading into the Hole-in-the-Wall, a major attraction of this wilderness.

Visitor facilities at trailheads and other entry points would be upgraded to improve access opportunities, services and information. The BLM would provide additional onsite information to better inform and educate the public. Signs would identify the boundaries, wilderness name, and some regulations governing use. Personal contact by BLM staff and volunteers would provide additional onsite information and education when users were encountered during area patrols. The BLM would also continue to supply information about the areas at the Ranger Station on NM 117 and BLM offices in Grants and Albuquerque.

Motorized vehicle access would only be allowed to non-federal inholdings and livestock grazing operations, over 5.5 miles of authorized routes in the Cebolla Wilderness and 17.8 miles in the West Malpais Wilderness. Access for livestock grazing use would continue under the conditions set in BLM RIM Plans (1990) and AMPs/CRMPs for the individual allotments overlapping these two areas. Access to inholdings would continue over routes selected by the BLM to cause the least impact to the areas' wilderness character, while serving the purposes for which the land was held or used.

Traditional American Indian cultural practices would be allowed to continue in the two areas in a manner consistent with the intent of the Wilderness Act. Motor vehicle access to the perimeter of each wilderness would be allowed, but such use inside the wilderness would be prohibited, unless the BLM has granted prior authorization after consultation and evaluation. When the BLM authorized such use of motorized vehicles by American Indians, stipulations to control impairment of wilderness character would be met. Upon request, the BLM would temporarily close the smallest practicable area for the minimum period needed to accommodate American Indian activities.

In most instances, cultural and historical resources would be subject to the forces of nature in the same manner as other wilderness resources. Stabilization and scientific studies of selected cultural resources and historical sites within the two wildernesses would continue as required to meet protection and preservation mandates. The BLM would authorize research (under Section 501 of P.L. 100-225) if it could be carried out unobtrusively so as not to degrade wilderness character.

Except for guided trips, visitor information and education programs about selected cultural and historical sites within the wildernesses would be located outside the wilderness boundaries or dispersed at other sites. The BLM would place additional interpretive information about the Dittert Site (located within the boundaries of Cebolla Wilderness) outside the wilderness boundary, at the trailhead to the site in Armijo Canyon. Visitation of selected cultural and historical sites within the wildernesses would be encouraged through additional information provided offsite. Except for continued maintenance, monitoring and guided hikes, the BLM would provide no additional onsite interpretation.

Wildlife habitat management would continue to be guided by the BLM's Wilderness Management Policy. Hunting and trapping would be permitted under applicable state and federal laws and regulations. The BLM would continue to allow use and maintenance of the two wildlife exclosures and the water catchment, using the "minimum tool" concept.

The BLM would consider vegetation treatments on a case-by-case basis under guidance found in the BLM's Wilderness Management Policy. The agency would control fires to prevent their spread outside wilderness, the loss of human life or property. Fire suppression methods would be those that caused the minimum adverse impact on wilderness character.

The BLM would continue to seek acquisition of mineral interests and approximately 800 acres of surface inholdings from willing sellers. Priority would be given to those lands that were undeveloped or where use would pose a detrimental threat to wilderness character. The BLM would manage these lands as wilderness, when acquired.

Issue 5--Wilderness Suitability

Chain of Craters WSA

The BLM would not recommend this WSA to the Congress as suitable for wilderness designation. If released by the Congress, this 18,300-acre area would be managed according to this plan. Users of this area would have opportunities for roaded natural types of recreation on 7,800 acres, semi-primitive motorized types on 5,400 acres, and semi-primitive non-motorized types on 5,100 acres.

Lands Contiguous to the Cebolla Wilderness

Under Alternative D, the BLM would recommend for wilderness designation 3,930 acres of the 10,380 acres studied under Section 202 of FLPMA. Until the Congress either designated or released these lands, the BLM would manage them under the Interim Management Policy, except as applied to minerals. The agency would manage the 6,450 acres not recommended as suitable for designation under the management prescriptions identified in this plan.

Issue 6--American Indian Uses & Traditional Cultural Practices

Under Alternative D, the BLM would manage this issue in the same way as under Alternative A.

Issue 7--Cultural Resources

Under Alternative D, the BLM would allow scientific use of prehistoric cultural resources, but would place stronger emphasis on conservation for future use. This objective would reflect the principal guidance provided in P.L. 100-225.

Use Allocation

The BLM would manage the Dittert Site, the Ranger Station Reservoir, the Lobo Canyon Petroglyphs, and outstanding homestead-era sites for public value and allocate them to public use, while taking care not to impair their information potential. As additional resource information became available, the agency could identify new areas for public use under this alternative, but only if their information potential would not be adversely affected and appropriate American Indian consultations and NHPA compliance were done. Except as provided below, the BLM would manage historical Anglo, Hispanic and Navajo cultural resources for scientific use, with required American Indian consultations. Paleo-Indian, Archaic, and Pueblo sites would be managed for their information potential and allocated to conservation for future use. Particular properties could be reallocated to scientific use under the conditions outlined below.

Compliance with the National Historic Preservation Act

Occasionally, development projects such as range improvements or recreational facilities would be proposed within the Planning Area. Under Alternative D, the BLM would emphasize avoidance of cultural resources, rather than mitigation through data recovery. Secondary impacts such as unauthorized collection of surface artifacts would be more thoroughly studied and evaluated than is usual outside the NCA. Therefore, under this alternative the BLM would require an inventory over an area at least ¼-mile wide around proposed visitor use developments.

Inventory & Baseline Condition

The BLM would establish an overall goal of a 2½-percent Class III inventory. The agency would contact supplemental, reconnaissance-level surveys of critical areas and/or types of resources.

Scientific Investigation

Because P.L. 100-225 emphasizes preserving cultural resources for long-term scientific use, the BLM would restrict archeological research that could result in physical alteration of prehistoric remains, including surface collection. The agency assumes that cultural resources within the NCA are generally less threatened than resources outside the NCA, so uses that would result in the physical alteration of cultural properties would be supported outside the NCA whenever possible. Whenever possible within the NCA, the BLM would encourage research that used existing collections or non-disturbing field techniques.

If research involving the physical alteration of prehistoric sites was proposed within the NCA, a research design would be required detailing the nature of the proposed work, its purpose, and its anticipated impact on similar properties within the NCA. Researchers would have to consider the feasibility of conducting their work using cultural resources outside the NCA. They would also have to justify physically altering the NCA's cultural properties in terms of (1) clearly existing threats to their physical integrity, or (2) the central role these particular sites played in relation to the research design.

The BLM would approve such research only if adequate funding was ensured for analysis, reporting, and curation of artifacts. The approval would follow appropriate American Indian consultation, and be granted only under the following circumstances: (1) the characteristics to be altered were threatened and would be lost without data recovery; or (2) the research could not be done using sites outside the NCA, and after the research was completed a substantial portion of the site or equivalent sites would remain in an unaltered state.

Research would be allowed in wilderness under the conditions described under Alternative A, and the above provisions would be applied even more stringently.

Pottery Collection

The BLM would manage this activity in the same way as discussed under Alternative B.

Signs

The BLM would manage this tool in the same way as discussed under Alternative A.

Access Easements & Consolidation of Ownership

The agency would manage these activities in the same way as discussed under Alternative B.

Road Closure

The BLM would close the Cebolla Canyon Community road, and other roads as discussed above under Alternative A.

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Formal Monitoring

This function would continue at the Dittert Site, Oak Tree Ruin and Arroyo Ruin, as discussed above under Alternative A.

Stabilization

At the Dittert Site, Oak Tree Ruin, and Arroyo Ruin, the BLM would maintain the existing stabilization and erosion-control projects.

Additional stabilization and/or erosion-control projects for prehistoric sites would be undertaken only if highly valuable resources were endangered. The BLM has assessed the stabilization and repair needs of many homesteads, and would assess additional structures as needed. The agency would monitor key sites, including all those being managed for public interpretation, to ensure timely identification of natural deterioration.

Stabilization and erosion-control measures would be allowed within wilderness under the conditions described above under Alternative A.

Fire Suppression

Eight well-preserved homesteads would be singled out as high-priority fire suppression zones. Additional sites could be added to this list if significant cultural resource values were threatened.

Special Designations

The BLM would manage this function in the same way as discussed above under Alternative A.

Boundary Modifications

Boundary modifications proposed under Alternative D (refer to Issue 10 below) would expand the NCA, adding portions of the Breaks Non-NCA and Tank Canyon SFO Units that contain highly valuable resources.

Public Interpretation

The BLM would conduct frequent interpretive hikes that included visits to cultural resource sites. In addition to completing offsite interpretive measures such as brochures, exhibits, and other media, under Alternative D the BLM would encourage visitation at the Dittert Site, Lobo Canyon Petroglyphs, and Ranger Station Reservoir. The agency would also develop public interpretation for outstanding homestead-era sites.

During the life of this plan, no onsite interpretive development would occur at the Pinole Site, The Citadel, Cebolla Canyon Community, or Aldridge Petroglyphs, but the BLM would manage these sites to protect their potential for public use. If unsolicited visitation warranted, the BLM would install visitor registration boxes at those sites.

Issue 8--Wildlife Habitat

In addition to maintaining existing habitats as described under Alternative A, the BLM would increase efforts to improve the quality and quantity of wildlife habitats within the Planning Area. The agency would undertake up to eight of the following new wildlife habitat improvement projects, generally in areas where limiting factors occurred (e.g., lack of water, appropriate habitat). (Refer to Appendix P for descriptions of other typical projects that could be used, e.g., water developments, vegetative manipulation, fences.) Sikes Act funding would be used for these projects wherever appropriate.

Prescribed Fires
& Wildland Fires Under Prescription

These two types of fire would be used throughout the Planning Area to maintain and/or enhance wildlife habitat and support the variety of wildlife populations. These prescribed burns would range from 50 to 1,000 acres in size, with an average of 500 acres each.

Prairie-Dog Colony Enhancement Area

As identified in Alternative B, this project would use the south half of the North Pasture and the Head Pasture of the El Malpais Allotment (Breaks Unit) as a prairie-dog colony enhancement area of approximately 1,000 acres. This would help support two local, special-status species (the burrowing owl and mountain plover), and if the colony expanded to 200 acres in size, it would also be a potential release site for the highly endangered black-footed ferret.

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Wildlife Water Catchments

As identified in Alternative B, the BLM would install three wildlife water catchments within the Cerro Brillante Unit (T. 6 N., R. 12 W., Sec. 31, SE¼; Sec. 33, NE¼; Sec. 35, NE¼). These would be funded through the Sikes Act Program.

Riparian Fencing

As identified in Alternative B, the BLM would fence approximately 1½ miles of perennial stream (T. 5 N., R. 10 W., Secs. 2 and 3) along Cebolla Canyon below Cebolla Spring to protect the area. This is one of the few perennial stream sections that occur within the Planning Area.

Reintroductions

As identified in Alternative A, the BLM would work with the NMDG&F and the FWS to conduct feasibility evaluations for reintroducing native, special-status wildlife and/or plant species within the Planning Area.

Issue 9--Vegetation

Under Alternative D, the BLM would use a full range of management techniques (forest and woodland, livestock grazing, riparian, fire and watershed) to achieve the vegetative objectives.

The agency would allow piñon-juniper thinning on areas up to 150 acres in size to meet woodland and ponderosa pine objectives. Sites selected for such rehabilitation would be those with the highest potential for success; i.e., having the best soils, elevations, slopes and exposures. A variety of tree sizes and ages would be left. The ground cover from trees left after thinning would be between 10 and 20 percent. No thinning would be authorized in wilderness nor in the Chain of Craters WSA (unless the Congress released it from review).

Changes in livestock grazing management would be made to ensure accomplishment of vegetative objectives. AMPs/CRMPs including such objectives would continue to be developed. The Cerro Brillante CRMP is scheduled for completion in 1998 and the El Malpais CRMP in 1999. Existing plans for the Los Cerros, Techado Mesa, and Los Pilares Allotments would be amended to include vegetative objectives and requirements for minimum rest periods from livestock grazing. The minimum livestock grazing rest period would be from April 15 to October 15 for at least one pasture or area per allotment each year. New range improvements would be developed if needed to provide this rest. AMPs/CRMPs would contain objectives and actions for forests and woodlands, wildlife, riparian, fire and watershed management. If monitoring studies indicated the need, existing plans could be revised, new plans developed, and/or livestock grazing use could be reduced.

The BLM would fence spring areas used by livestock to exclude them, and would develop livestock and wildlife waters elsewhere. Springs not used by livestock could be developed for wildlife use. The BLM would plant willows and other native riparian species as needed. To allow for fully functioning riparian condition, the BLM would remove exotic species such as saltcedar and Russian olive using mechanical, biological or chemical treatments.

Prescribed fires and wildland fires under prescription would be used to manage fuel loads, protect private property and accomplish vegetative objectives. Up to five fires ranging in size from 50 to 1,000 acres each would be used each year, including for reducing piñon-juniper in potential ponderosa pine habitat. If needed to ensure reestablishment on some locations, the BLM would plant ponderosa seedlings. In areas proposed for prescribed fires, the agency would plan pre- and post-burn rest from grazing in coordination with the affected allottee(s).

For watershed management, the BLM would consider building small structures to spread or divert water. Control of noxious weeds (e.g., knapweeds, bindweed, leafy spurge, thistles) would be allowed by mechanical, chemical or biological means. Site-specific EAs would be completed before any structures were built or noxious weeds treated. To improve watershed conditions and assist in accomplishing vegetative objectives, the BLM would provide for the use of such forms of vegetation treatment in AMPs/CRMPs. Treatments would be considered in areas where livestock rest and prescribed fires were not effective; e.g., areas where junipers too small for fuelwood had invaded (in meadowlike openings, grasslands, or savannas), or areas where fire-tolerant

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species such as rubber rabbitbrush had increased or invaded (e.g., in valley bottoms, drainage, meadow-like openings).

Issue 10--Boundary & Land Tenure Adjustments

These would be handled in the same way as under Alternative C (refer to Map 32), with one exception. The BLM would recommend to the Congress that the boundary of the Cebolla Wilderness be amended to include portions of newly acquired lands that are contiguous to the current wilderness boundary. This change, less 160 acres of excluded Acoma lands, would result in a net increase of 3,930 acres in the Cebolla Wilderness (refer to Map 28).

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Eliminate Grazing from the Planning Area

Some individuals have suggested that grazing be eliminated completely from the NCA. However, this measure is not consistent with P.L. 100-225, which specifies that within the NCA, livestock grazing is permitted to continue, including in wilderness.

Resource conditions within the Planning Area do not warrant area-wide prohibition of livestock grazing. The Rio Puerco and Socorro RMPs contain the management prescriptions needed to meet resource management objectives, including the vegetative objectives established in this plan.

Designate the Chain of Craters Area as an ACEC

The option to designate Areas of Critical Environmental Concern (ACECs) was established in FLPMA for those areas where special management is needed to protect and prevent irreparable damage to an important value, resource, system or process, or to protect human life and safety from natural hazards. For the Chain of Craters area, NCA designation, regulations, and existing management policies are sufficient to protect values. The NCA has been withdrawn from mineral development and commercial woodcutting because of the potential for irreparable damage to natural and cultural values. Therefore, the BLM is not considering the designation of the Chain of Craters as an ACEC.

Designate the Chain of Craters Area as an American Indian Wilderness

In P.L. 100-225, the Congress established the Chain of Craters as a WSA and required the BLM to review its suitability for designation as wilderness. As part of this El Malpais Plan, the BLM is recommending whether the area should or should not be managed as wilderness.

Several American Indian groups use El Malpais and the Chain of Craters for traditional cultural practices. The Acomas and Ramah Navajos have taken the strongest interest in how the Planning Area is managed; other tribes such as the Zuni, Laguna, Alamo Navajo, Cañoncito Navajo and Hopi may also have concerns.

At issue is the need for motor vehicle access to sacred places, privacy for traditional practices, as well as continued access to areas used for hunting, piñon nut picking, and gathering of other traditional plants and minerals. The frequency of need for access varies by Indian group.

Ramah and Acoma have requested unrestricted vehicle access to the Chain of Craters. This is contrary to uses allowable under the Wilderness Act. Unless specifically allowed in the act or an individual wilderness designation law, temporary or permanent roads and the use of motorized equipment, motor vehicles or other forms of mechanical transport are prohibited under Section 4(c). Designating the Chain of Craters as an American Indian Wilderness with unrestricted motor vehicle access as an alternative is not considered in this plan.

The Chain of Craters is evaluated in this plan as to its suitability for inclusion in the National Wilderness Preservation System (NWPS). Only the Congress can designate this area as wilderness or release it from wilderness review. Should the Congress ultimately designate the area, the BLM will make them aware of requests by local American Indians to use motor vehicles for access to these lands for traditional cultural practices. Such use would require special provisions in the designating legislation, or the area would have to be managed under the Wilderness Act, BLM policy and regulation.

Allow Unrestricted Collection of Prehistoric Pottery

As a traditional activity that should be allowed in the Planning Area, Acoma Pueblo has identified the collection of prehistoric pottery for use as temper in the manufacture of contemporary pottery. This practice dates back to at least A.D. 1000. For Acoma people, visiting ancestral places and gathering objects made by their forebears is an important means of maintaining continuity and connection with the past. As supplies of prehistoric pottery on Acoma lands are depleted, the Planning Area could become important for this activity.

Frequently, virtually all identifiable sherds collected for this purpose are removed from archeological sites; few other natural or cultural processes in the Planning Area pose a greater danger to the scientific potential of the sites. Pottery is the principal means of dating prehistoric sites and identifying their local and external connections. Scientific excavations are increasingly expensive, and in this area they are often strongly opposed by American Indians. For these reasons and under all alternatives, surface archeological investigations would be the principal means of scientific study during the life of this plan.

P.L. 100-225 directs the BLM to allow American Indians access to the NCA for traditional cultural practices. For this reason, the agency has given serious consideration to allowing unrestricted collection of pottery from the surface of prehistoric sites, either within the NCA as a whole or within particular portions.

However, collection of pottery is also explicitly prohibited by ARPA. P.L. 100-225 places a great deal of emphasis on the enforcement of ARPA, and the history of the El Malpais legislation makes it clear that protection of scientific values is one of the principal reasons for establishment of the NCA. Interpreting "access" to mean unrestricted collection could not be reconciled with provisions of ARPA or with the intent of P.L. 100-225. Therefore, unrestricted collection of pottery would not be allowed under any of the plan alternatives.

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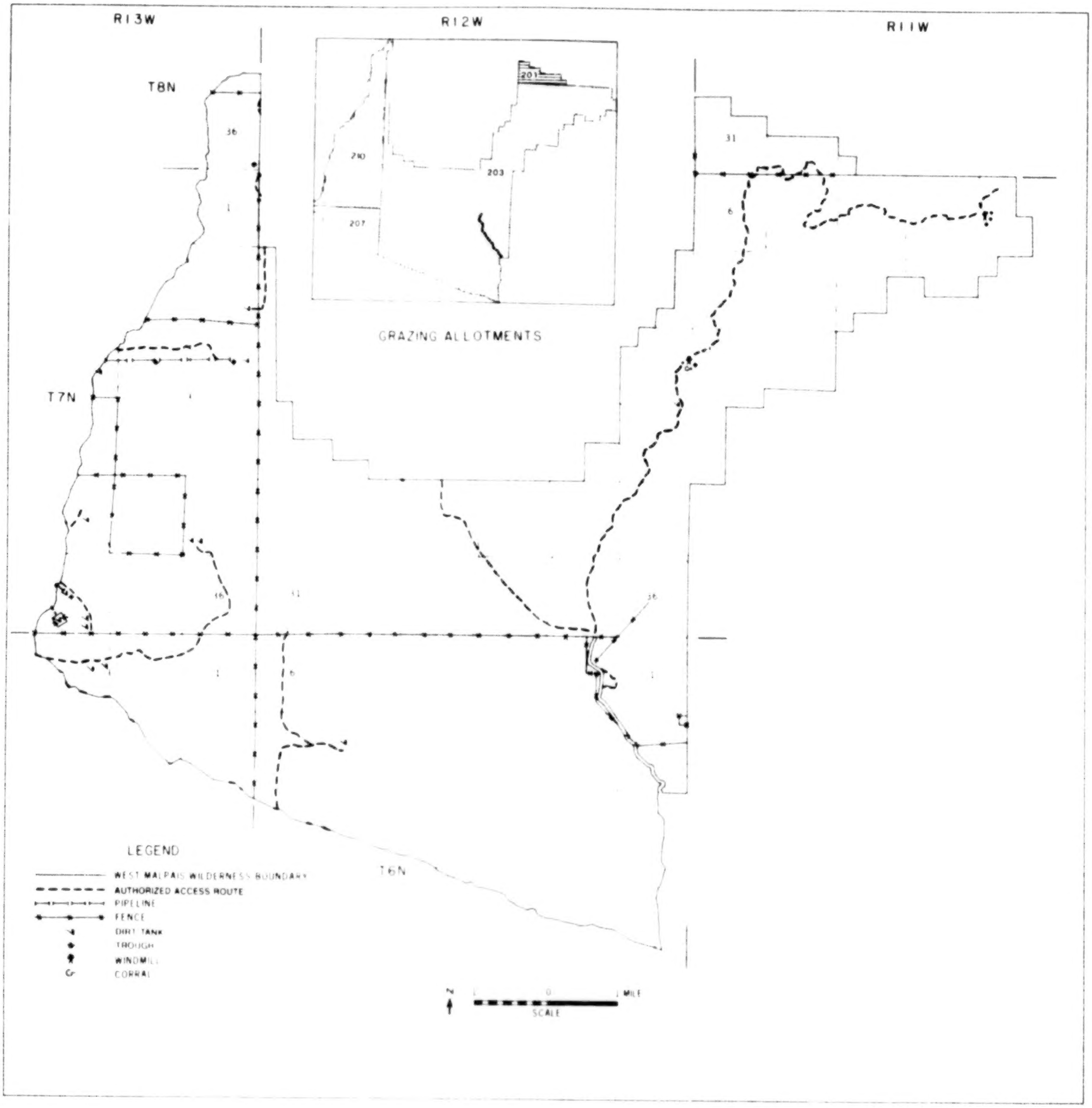


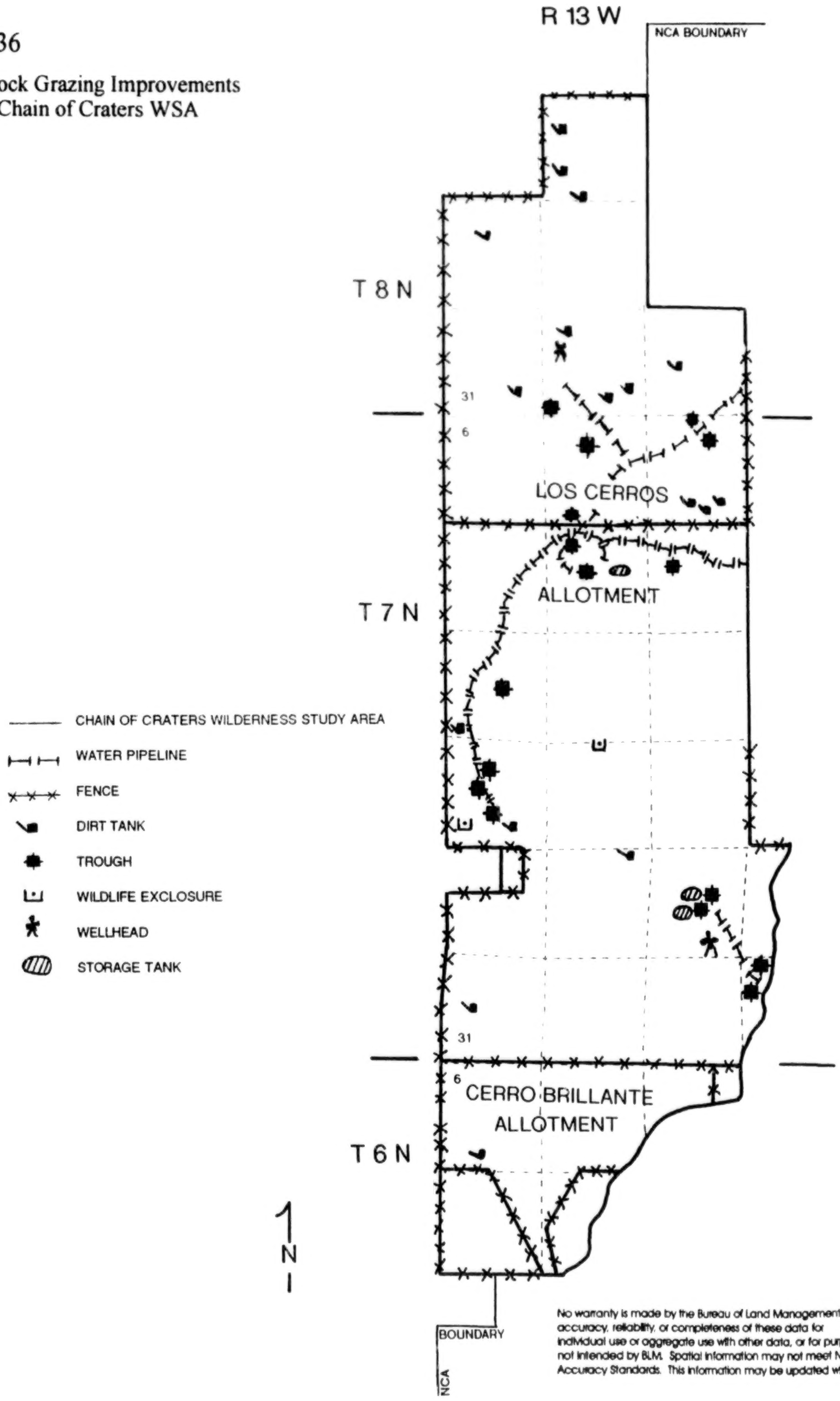
Map 34

Livestock Grazing Improvements
in the West Malpais Wilderness

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Map 36

Livestock Grazing Improvements
in the Chain of Craters WSA



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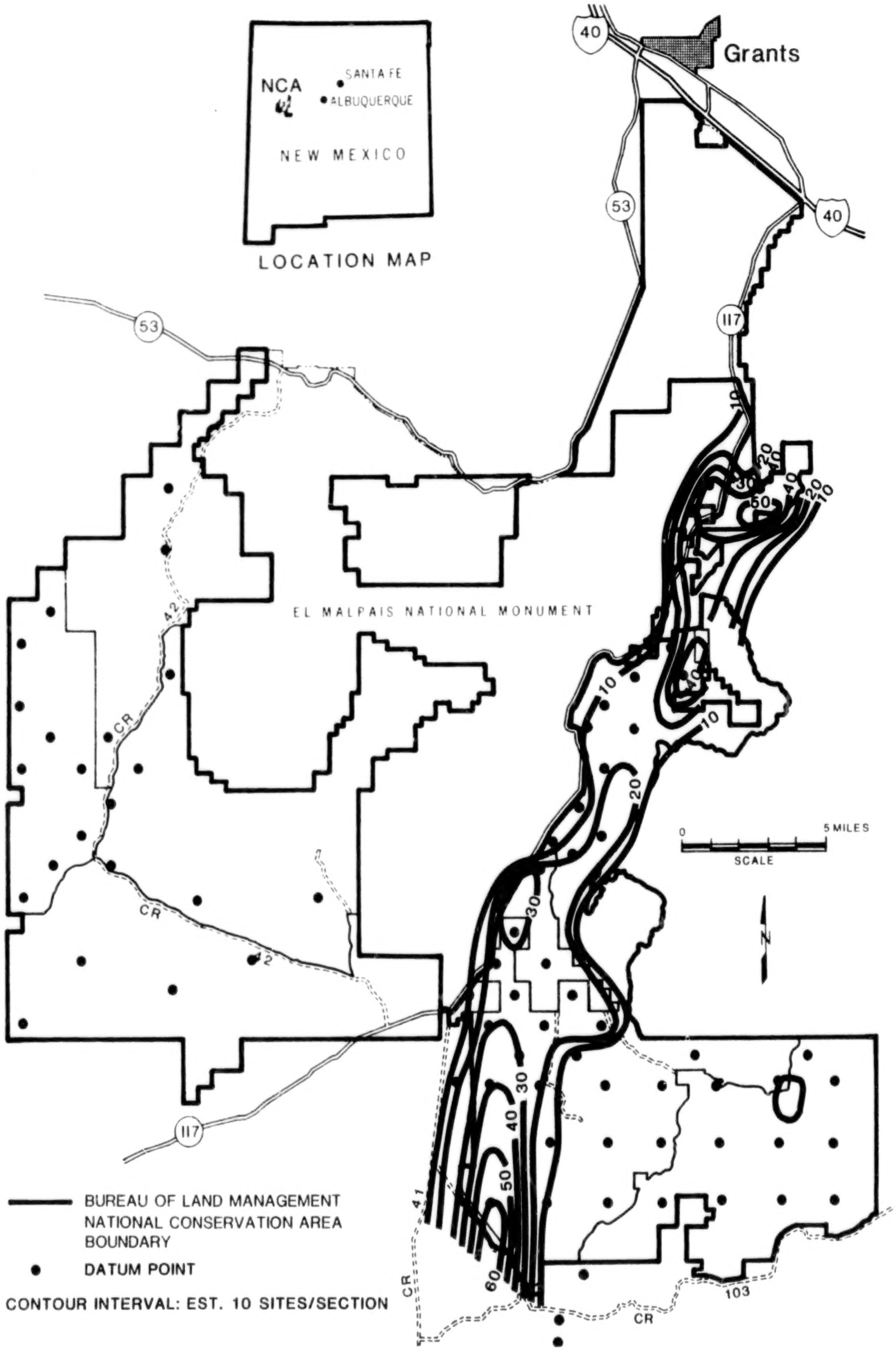
LOCATION MAP
NEW MEXICO
NCA
SANTA FE
ALBUQUERQUE
Grants
40
53
117
42
CR
41
103
EL MALPAIS NATIONAL MONUMENT
10
20
30
40
50
60
0
5 MILES
SCALE
N
BUREAU OF LAND MANAGEMENT NATIONAL CONSERVATION AREA BOUNDARY
● DATUM POINT
CONTOUR INTERVAL: EST. 10 SITES/SECTION

Map 37

Relative Density of Anasazi Sites
Based on Class II Inventory

CHAPTER 3

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the physical, biological, social and economic characteristics of the El Malpais Planning Area that may be affected by the actions proposed under the alternatives identified in Chapter 2. Much of the information in this chapter summarizes more detailed materials contained in the *Rio Puerco Resource Area Management Plan* (RMP--USDI, BLM 1986). These materials are available for review at the Albuquerque Field Office.

General Physical Setting

Climate in the Planning Area is typically temperate, hot in the summer and cool in the winter. Precipitation averages 12 inches annually, with August being the wettest month (average 2.5 inches) and April or May the driest (0.35 to 0.42 inches). Daily temperatures can vary by 50 degrees or more. The highest daily average temperatures occur in July at 70 degrees Fahrenheit (°F), while the lowest daily averages occur in January at 32°F (Roybal, et al. 1984).

The Planning Area contains a wide assortment of geological formations that are important for scenic enjoyment, recreation, education and scientific study. The Cebolla Wilderness, Spur and Breaks Units on the eastern side of the Planning Area (refer to Map 3 in Chapter 1) are dominated by sandstone mesas, canyons, and vertical sandstone escarpments. On the western side, the West Malpais Wilderness, Continental Divide Unit and Chain of Craters WSA are dominated by volcanic landscapes, including numerous cinder cones.

RECREATION & FACILITIES

Recreation

The NCA and Planning Area provide many diverse opportunities for recreation, both developed and dispersed. Some information on existing visitor use levels and patterns in the NCA has been collected at the El Malpais Information Center in Grants (no longer open), at the BLM Ranger Station, and at La Ventana Natural Arch. Records indicate that visitors come from a variety of places--all over the U.S., Albuquerque and Grants, Europe and other foreign countries. They include commercial truckers passing through on State Highway (NM) 117, vehicle campers, American Indians, cattle operators, mountain bikers, wilderness users and individuals engaging in other recreational pursuits. Developed recreation is dependent on managed recreation sites such as campgrounds, trailheads, and picnic areas, while dispersed recreation occurs over most of the Planning Area, independent of maintained facilities.

The cities of Grants and Milan are actively seeking economic benefits from the tourism industry to diversify local economies, and are supplying some developed recreational facilities. The Planning Area also provides recreational opportunities for citizens of two of the largest metropolitan areas in New Mexico, Albuquerque and Santa Fe. Population increases in these two cities are resulting in increased demand for recreation opportunities in the Planning Area.

Recreation visitation to the Planning Area and National Monument is projected to grow to about 207,600 people annually by the year 2000 (Madell 1988), although current visitation is about 65,000 people per year at the BLM's most heavily used sites. The expanding population in the southwestern United States, increased disposable income, more leisure time, and increased recreational vehicle ownership (especially of four-wheel-drive vehicles and mountain bikes) is increasing visitor use of the area (in both frequency and duration). Travel to and within the Planning Area continues to be primarily by private vehicle, but tour bus use is expected to increase. Most visitors stay on paved or well-graded roads, but some reach the less-traveled areas by primitive road, and a few hike into the back-country areas.

The types of recreation available on public lands in the Planning Area include but are not limited to camping, hiking, backpacking, picnicking, sightseeing of natural and cultural resources, photography, driving off-highway vehicles (OHVs), road and mountain bicycling, horseback riding, caving, climbing, cross-country skiing, hunting, pack-animal trips, trapping, target practice, and enjoying wilderness solitude (refer to Table 3-1).

TABLE 3-1

ESTIMATED RECREATIONAL USE OF THE EL MALPAIS NCA, FISCAL YEAR 1995

Activity	No. of Visitors (thousands)
Camping	10
Hiking	50
Picnicking	20
Sightseeing	60
Back-Country Driving	5
Hunting	6
Viewing exhibits at Ranger Station	15.6
Other [a]	30
Total [b]	65

Notes: [a] Includes road & mountain biking, horseback riding, skiing, shooting, trapping, caving, climbing, photography, & pack trips.

[b] This is not a grand total; visitors to the NCA engage in multiple activities during their visits.

Recreational opportunities depend on an area's setting and the kinds of activities that could take place. The existing network of roads determines how accessible different recreational opportunities are to the visitor. To evaluate the effect of access on these opportunities, the BLM uses a system referred to as the Recreation Opportunity Spectrum (ROS--refer to Appendix C for a summary). The ROS system provides a framework for classifying and defining types of outdoor recreation environments, activities, and experience opportunities. The Planning Area contains three of the six classes of opportunities, semi-primitive non-motorized, semi-primitive motorized, and roaded natural (refer to Table 3-2 and Map 6 in the map section before this chapter).

Of all the known and potential opportunities for recreation in the Planning Area, some of the most common are discussed below. The ROS classes and units in which the activity can or does occur are also included.

Camping opportunities in the Planning Area are generally at dispersed sites in all three ROS classes. Vehicle campers who want to have access to tables for meals are allowed to camp along the old roadbed of NM 117 at the southern end of The Narrows (also used as a picnic area). No camping is allowed at the Ranger Station or La Ventana Natural Arch. Camping is also discouraged in units with restricted access such as the Neck and Spur. Periods of heavier camping use occur in the back country during hunting and piñon-picking seasons.

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TABLE 3-2

RECREATIONAL OPPORTUNITY CLASSES WITHIN THE PLANNING AREA (PA)

Area/Recreation Opportunity Spectrum (ROS) Class	**Acreage** [a]	**% of PA/Unit**
Planning Area Roaded natural	79,200	28
Semi-primitive motorized	85,000	30
Semi-primitive non-motorized	122,100	42
Totals	286,300	100
Cebolla Wilderness Roaded natural	9,000	15
Semi-primitive motorized	10,000	16
Semi-primitive non-motorized	43,000	69
Totals	62,000	100
West Malpais Wilderness Roaded natural	4,900	12
Semi-primitive motorized	2,400	6
Semi-primitive non-motorized	32,600	82
Totals	39,800	100
Chain of Craters WSA Roaded natural	7,800	43
Semi-primitive motorized	7,500	41
Semi-primitive non-motorized	3,000	16
Totals	18,300	100

Note: [a]Rounded to nearest hundred acres, including both public & private land.

Hiking is also a dispersed activity in the Planning Area that occurs in all ROS classes and units. However, some concentrated use is taking place; trails developed from high-use foot traffic now exist along the Narrows Rim Trail and on some old vehicle routes that extend into the West Malpais Wilderness and Cebolla Wilderness.

The diverse, broken terrain, variety of wildlife, dramatic vistas, and prehistorical and historical resources provide excellent viewing opportunities and destinations for hikers in the Cebolla Wilderness. Three key access points to this wilderness are located at La Ventana Natural Arch, The Narrows and the Dittert Site. The Hole-in-the-Wall of the West

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Malpais Wilderness is a 6,000-acre kipuka (refer to the Glossary) that offers hikers and backpackers a rugged experience in lava terrain with watchable wildlife and remoteness.

The Continental Divide National Scenic Trail (CDNST) corridor crosses through the Planning Area. Approximately 25 miles pass through the Cerro Brillante, Chain of Craters, Continental Divide, Cerritos de Jaspe and Neck Units. Another 24 miles of the corridor cross private and National Monument lands. The BLM and volunteers have built rock cairns and posted signs to mark the public land portion of this trail. In the northern portion of the Chain of Craters WSA, 6 miles of the trail have been marked. In the Cerro Brillante Unit, 4.5 miles have been marked (from the southern boundary of the Chain of Craters WSA around Cerro Brillante, and connecting with CR 42). Two miles of marked treadway exist in the Cerritos de Jaspe Unit, and connect with the National Monument treadway at both ends.

La Rendija, a large crack in the old basalt flows, bisects the Cerro Brillante Unit and is a recreational/interpretational opportunity, especially for hiking. When the CDNST is completed, its southern portion will pass near La Rendija (if the BLM can acquire an easement across private land in the Cerro Brillante-AFO Unit). Hiking and backpacking opportunities also exist in the Chain of Craters WSA, where scenic vistas and volcanic features are the main draw.

Opportunities for picnicking occur in areas of two ROS classes, the semi-primitive motorized and the roaded natural. Although picnicking can take place almost anywhere in the Planning Area, it usually occurs at the southern end of The Narrows, at La Ventana Natural Arch or along the roaded natural areas.

Sightseeing or driving for pleasure are activities in which most, if not all, visitors participate. Many visitors are on their way to another destination and stop by the Planning Area just to see what is there. Most known visitor use consists of sightseeing from vehicles on NM 117, and short walks into portions of the wilderness by day hikers and photographers, many of whom plan return trips. The units most used for these activities are the Neck, Cebolla Wilderness, Spur, Chain of Craters WSA, and Cerro Brillante. The ROS classes involved are roaded natural and (possibly) semi-primitive motorized.

The variety of vegetation and terrain exhibited by the various units of the Planning Area provides a unique visual experience for NCA travelers. Particularly outstanding are the contrasts between dramatic variegated buff and pink sandstone cliffs with ponderosa pines clinging to crevices, open grassland meadows interspersed with piñon-juniper woodlands, and expansive black lava flows covered with stunted conifers. A series of volcanic cinder cones in the Chain of Craters Unit offers vantage points to view vast lava flows and distant sandstone cliffs to the east. County Road (CR) 42 runs from a high elevation where mixed conifer and piñon-juniper woodlands occur into a vast plain of gently rolling, grass-covered hills and swales formed by ancient lava flows. Occasional pronghorn antelope and seasonal, migrating waterfowl can be viewed from CR 42. Seasonal ponds attract waterfowl and shore birds to areas near the road and on public land.

Visitors who spend more than a few hours within the Planning Area usually drive along the back-country roads such as CR 42 and the Cebolla Canyon road. The Brazo, Cebolla Wilderness, Chain of Craters WSA, Continental Divide, Cerritos de Jaspe and Cerro Brillante are the units of choice for most back-country users. Two ROS classes, semi-primitive motorized and roaded natural, follow these back-country roads. The Planning Area's system of dirt roads offers the opportunity for mountain biking, horseback riding, and touring with high-ground-clearance vehicles. Access by these dirt roads may be limited due to impassable road conditions when the roads are wet. Another aspect that may limit access is land ownership; when access is limited, recreation potential is also limited. The number of visitors who reach remote locations in the Planning Area is unknown.

Hunting can occur on all public lands in the Planning Area, except where it is restricted by the BLM's Supplementary Rules for Recreation (USDI, BLM 1996) or New Mexico Department of Game & Fish (NMDG&F) regulations. Units where hunting most often occurs are the Cebolla Wilderness, West Malpais Wilderness, Chain of Craters WSA, Cerro Brillante, Brazo, Continental Divide and Cerritos de

Jaspe. The isolation of the back-country units offers greater opportunities for hunting success.

Mountain biking opportunities occur along roads in two ROS areas, semi-primitive motorized and roaded natural. Most mountain bike activity has occurred in the Cerritos de Jaspe, Brazo, Continental Divide and Cerro Brillante Units, and the Chain of Craters WSA. Because of the design of the equipment, road biking usually occurs along paved roads (NM 117 and NM 53), but is limited by the narrow travel corridor of portions of these two roads. Roads open to vehicle traffic provide the best opportunities for biking, as no mountain bike trails have been designated.

Opportunities for horseback riding are plentiful within the Planning Area, although the BLM does not know how much use is occurring. Units such as the Cebolla Wilderness, West Malpais Wilderness, Chain of Craters WSA, Brazo, Cerro Brillante and Cerritos de Jaspe are most conducive to horseback travel, which can occur in any ROS class. The rugged terrain of the Chain of Craters WSA and the West Malpais Wilderness sometimes makes travel by horseback much more comfortable than travel by vehicle.

Very few caves are known to exist in the Planning Area. These occur in the Cerritos de Jaspe, Continental Divide and Cerro Brillante Units, and the Chain of Craters WSA.

Climbing is an infrequent use that occurs along The Narrows. Other climbing opportunities may exist in the Cebolla Wilderness and Brazo Units. Climbing could occur in any of the three ROS classes.

The 35-mile long, Chain of Craters Back Country Byway follows CR 42 through the western portion of the Planning Area and was designated to encourage recreational travel to this area. Volcanic landscapes dominate this zone. The west side of the Planning Area is likely to be attractive to those interested in long day trips, with proper vehicles and overnight or more extended visits. (Note: CR 42 can be rough under dry conditions and impassable when wet. This situation affects access to the west side of the Planning Area and is reflected in the overall figures for annual visitation.)

Public lands within the Planning Area that are outside the NCA were previously privately owned, so no information about current recreational use is available. The recreational potential for and opportunities on these lands are similar to those on adjacent NCA lands.

Two recreational outfitters use the Planning Area, their use being stipulated in Special Recreation Permits issued to each. Both permittees also exercise their permits in other portions of Albuquerque Field Office lands for which planning has already been completed (USDI, BLM 1986).

Facilities

Multiple ownership of the Planning Area and surrounding lands affects facility development. BLM and U.S. Forest Service lands surround the National Monument, so no single agency provides for all types of recreational use in the area, and joint facilities can be used.

As required by P.L. 100-225, the BLM has constructed a Ranger Station for visitor services and resource protection in Section 32, T. 9 N., R. 9 W. (refer to Map 10). [An Environmental Assessment (EA) was prepared for the facility in 1990 under the Rio Puerco RMP.] The Ranger Station offers visitors a location in which to learn about the Planning Area through interpretive exhibits, a short video presentation and personal contact with BLM staff. The building also provides restroom facilities and access to drinking water. The facility is complete, except for construction of a short interpretive trail, and is universally accessible to all visitors (including those with disabilities).

One of the largest natural arches in New Mexico, La Ventana, is located in the Cebolla Wilderness along NM 117 and is highly accessible to visitors to the Planning Area. Annual visitor numbers for this site are estimated to be as high as 65,000 people. To stop resource damage and block illegal vehicle access to the Cebolla Wilderness, the BLM has built a parking lot at the arch with a capacity of 32 cars and 3 buses or recreational vehicles. The agency and volunteers have built a trail from the parking lot to the arch, two vault toilets, and interpretive wayside exhibits.

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The Narrows, along NM 117, is being used for picnicking, camping, and parking for access to the Cebolla Wilderness, as no facilities can be constructed inside wilderness. The site is the old roadbed of what is now NM 117. Safety must be improved, because entering and exiting the site onto the existing highway is dangerous.

The site offers an opportunity for day use of the Cebolla Wilderness, which encompasses the sandstone bluffs and lava features, and contains appealing vegetation such as stunted ponderosa pines and a small prehistorical site. All these features are within a short walk from the highway and accessible at most visitors' skill level. The Narrows Rim Trail into the wilderness has a small sign and rock cairns at a few points along the treadway. Recurring use of the trail has created the treadway, while the BLM and volunteers have built the cairns.

Two gates have been installed within the Planning Area for horseback access. One gate is located near the Narrows Rim trailhead and provides access into the Cebolla Wilderness. The second gate is located at the northern end of the West Malpais cherry-stemmed road and provides access into the West Malpais Wilderness and Hole-in-the-Wall.

A variety of developed campgrounds, recreational vehicle camping areas, and motel accommodations exists within the region north of the Planning Area. Within 80 miles of Grants are 1,150 campsites, including federal, state and private facilities. The National Park Service (NPS) is proposing to develop a primitive camping area on the west side of the National Monument and the NCA (USDI, NPS 1990b). Primitive camping is permitted on most Planning Area lands. The areas near La Ventana Natural Arch and the Ranger Station are closed to camping.

INTERPRETATION

Interpretation is a resource management tool that connects visitors with resources, promotes understanding of ecosystems and cultures, reinforces visitor safety, and promotes resource management decisions. When managers wish to modify visitor attitudes and/or behaviors to protect or improve resources, they often use interpretive methods.

As the Planning Area becomes better known, increased use is expected. Future users will likely come from a great diversity of cultural, social, and economic backgrounds. This increased use will challenge the BLM effectively to provide interpretive and education services to a wider variety and greater numbers of the public.

The BLM educates and informs the public about the Planning Area mainly through brochures distributed throughout the community and the country, newspaper notices published in the region, highway signs posted on I-40, and word of mouth. The BLM also does public outreach by developing and maintaining contacts and cooperative agreements with teaching and research institutions, non-profit organizations, other state and federal agencies, and American Indian groups.

The BLM provides personal services at the Ranger Station. Some guided interpretive activities, walks, and caravans begin there, with topics ranging from American Indian uses of the land to wilderness ethics and geology. BLM staff lead hikes to petroglyphs, former habitation sites of American Indians and homesteaders, and along the Narrows Rim Trail. The EA for the Ranger Station calls for an interpretive orientation trail (the Ranger Station Nature Trail) up the mesa behind the building, but this has not yet been constructed.

ACCESS & TRANSPORTATION

About 76 miles of federal, state and county roads provide access to and within the Planning Area. I-40 (which forms the Planning Area's northern boundary) and two state highways passing through the area serve as the primary transportation access routes (refer to Map 18 in the section before this chapter). Vehicle access to the central, western, and southern portions of the Planning Area is gained from county roads. Public access along the eastern and portions of the western boundaries is restricted through two Indian reservations.

From I-40, NM 53 skirts the north-northwest edge of the Planning Area. Forest Roads 50 and 447, which serve the Zuni Mountains of the Cibola National Forest, traverse short distances of the Planning

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Area before connecting with NM 53. NM 117 runs in a southwesterly direction from I-40 through the Planning Area's eastern side. CR 42, part of the BLM's National Back Country Byway program, links NM 53 and NM 117 as it passes through the southern and western portions of the Planning Area. CR 42 is classified as a Type II Back Country Byway, which is a road where travel by high-clearance vehicle is recommended. CRs 41, 102, and 103 provide access to the southern and southeastern edge of the Planning Area.

Tables 3-3 and 3-4 show the amount of traffic (in vehicles per day) that travels through the Planning Area on NM 117 (east side) and NM 53 (west side). In general, area traffic increased between 1986 and 1994 on both highways, with the heaviest traffic occurring on NM 53 near Grants. CR 42, which connects NM 117 and NM 53, receives a low volume of daily traffic and is often impassable during wet weather.

TABLE 3-3

ADJUSTED AVERAGE DAILY TRAFFIC (AADT) ON NEW MEXICO HIGHWAY 117 AT & NEAR INTERSTATE 40, 1986 & 1994 (vehicles/day)

	AADT	
Location (on NM 117)	**1986** [a]	**1994** [b]
At I-40	206	2,090
York Ranch (near junction, NM 117 & CR41)	84	
At junction w/CR 42 (35 mi. south of I-40)		2,090

Notes: [a] Source of data: USDI, NPS 1990a & 1990b.
[b] Source of data: NMSH&TD 1996.

TABLE 3-4

ADJUSTED AVERAGE DAILY TRAFFIC (AADT) ON NEW MEXICO HIGHWAY 53 NEAR GRANTS, 1986 & 1994 (vehicles/day)

	AADT	
Location (on NM 53)	**1986** [a]	**1994** [b]
Grants city limits	3,452	
Just south of Grants city limits		4,263
South of Grants (24 mi.)	409	
South of Grants (28 mi.)		1,740

Notes: [a] Source of data: USDI, NPS 1990a.
[b] Source of data: NMSH&TD 1996.

Connecting with the highways and county roads within the Planning Area are BLM-administered arterial, collector and local roads (refer to the Glossary). Roads inventoried include 356.5 miles open to public use (USDI, BLM 1996). Some of these also serve as access to private lands within the Planning Area. Though some routes receive intermittent maintenance, many are unimproved, requiring the use of a high-clearance vehicle when dry and becoming impassable when wet. Some off-highway vehicle users seek such challenges.

Off-highway vehicle uses are limited to existing roads and trails on 135,200 acres of the Planning Area's public land. Use of motor vehicles, mechanized equipment and other forms of transport are prohibited in the 100,800 acres of public land designated as wilderness, while such use is unrestricted on the remaining 12,000 acres. Of this 12,000 acres, 3,600 acres are designated as open to OHV use and the other 8,400 acres are undesignated through the land use planning process. BLM Socorro Field Office lands adjacent to the southeastern portion of the Planning Area are designated as open to OHV use, except for approximately 40 acres on which use is limited to existing roads and trails (USDI, BLM 1989d).

Within the Planning Area are 6.3 miles of designated vehicle routes outside wilderness that exist only for authorized users. Within the wilderness areas, 23.3 miles of routes are authorized for use by the BLM under the Wilderness Act and P.L. 100-225. These routes are available only for periodic access by those who maintain grazing management facilities, personnel needing access in emergencies, and property owners needing to reach private inholdings.

The Planning Area is open to horseback use with no restrictions. Bicyclists also can access the Planning Area using the existing vehicle road and trail network, except in the two designated wildernesses. No bike trails have been designated. Cross-country cycling is prohibited only in wilderness, but the Planning Area's rugged terrain and lava flows limit this activity elsewhere.

Access to the entire Planning Area also can be gained by hiking, although the rugged terrain in parts and the lack of water make this activity more difficult. No extensive trail system exists within the Planning Area. One constructed trail about ½ mile long leads from the parking lot to La Ventana Natural Arch. A short segment of this trail up to a viewpoint is paved to make it universally accessible (including to disabled visitors). The BLM Ranger Station, located 9 miles south of I-40 on NM 117, is also constructed to be universally accessible.

Another area popular for hiking is along the sandstone rim above The Narrows. At this area's south end, approximately 21 miles south of I-40 on NM 117, a hiker easily can scramble to the top of the rim. Following the Narrows Rim Trail (about 3 miles long) in a northerly direction leads to magnificent views of the lava and surrounding countryside, including La Ventana Natural Arch. The Narrows Recreation Site, which is located just outside the wilderness boundary, and the Narrows Rim Trail provide access for hiking and other primitive recreation activities in the Cebolla Wilderness.

Another way to access the Planning Area will be from the CDNST (refer to Map 18). The decision on CDNST location through this portion of central New Mexico was published in 1993 (USDA, FS). Within the Planning Area, three short trail segments have been marked in the Cerritos de Jaspe Unit (2 miles), the Chain of Craters WSA (6 miles), and the Cerro Brillante Unit (4.5 miles). No treadway or trail facilities have been constructed, although rock cairns have been built and signs posted on public land to mark the trail.

Under P.L. 100-225, the Secretary of the Interior must provide nonexclusive access to the NCA by American Indians for traditional cultural and religious practices, including the harvest of pine nuts. This access is to be consistent with the purposes and intent of the American Indian Religious Freedom Act and the Wilderness Act.

WILDERNESS

Introduction

The Planning Area contains two designated wildernesses and a WSA (refer to Map 2 in Chapter 1). The Cebolla Wilderness and the West Malpais Wilderness were established by the Congress through P.L. 100-225. This law also requires that the BLM review the Chain of Craters WSA and submit a recommendation to the Congress on its suitability or nonsuitability for preservation as wilderness.

Since the initial wilderness inventory and study conducted under Section 603 of the Federal Land Policy and Management Act (FLPMA), the BLM has acquired several thousand acres within the Planning Area. The agency's policy is to maintain an inventory of all public lands that may possess wilderness characteristics, including those lands acquired through exchange, donation or other means. If they are roadless areas possessing wilderness characteristics, these lands are evaluated and studied for wilderness suitability. In the Planning Area, the lands being considered for wilderness designation are contiguous to the Cebolla Wilderness and have not been previously inventoried or studied.

Wilderness Management

Cebolla Wilderness

This wilderness, located on the east side of the Planning Area, consists of approximately 62,000 acres. The Cebolla Wilderness is comprised of four former WSAs (Piñon, Rimrock, Little Rimrock and Sand Canyon).

Since the area was designated, the BLM has acquired approximately 800 acres of surface estate within its boundaries. The wilderness still contains three small inholdings (two private, one Indian) amounting to slightly over 500 acres. About 10,500 acres of private mineral subsurface estate also exist as part of the Cebolla Wilderness. These inholdings, surface and subsurface, are high priorities for acquisition identified in the *El Malpais Land Protection Plan* (USDI, BLM 1989b).

The exterior boundary of the Cebolla Wilderness is defined by formerly private lands, roads and the boundary of the Acoma Indian Reservation (refer to Map 2 in Chapter 1). The western boundary parallels NM 117 until the highway turns southwest. The boundary then proceeds southeasterly along utility line rights of way and the Tank Canyon Road. Roads and intermittent streams define the southeastern margin of the wilderness. The eastern boundary is generally defined by the top of Cebollita Mesa, which marks the edge of the Acoma Reservation, and the northern boundary is formed by a block of Acoma lands. BLM Road 2003 divides the northern and southern portions of the Cebolla Wilderness. The wilderness boundary is set back 100 feet from the apparent centerline of this graded road.

The Cebolla Wilderness contains a diversity of resource values that are manifested in unique visual qualities and a rich and varied wildlife habitat. Visitors have opportunities to view varied wildlife within several closely located scenic areas. Broken terrain, wildlife, vistas, and prehistorical and historical resources provide outstanding opportunities for recreational experiences including hiking, photography, backpacking, and primitive camping.

All 62,000 acres of the Cebolla Wilderness have been classified according to the ROS inventory and classification system (refer to Appendix C). About 43,000 acres (69 percent) of the wilderness are classified as semi-primitive non-motorized (refer to Table 3-2). The roaded natural and semi-primitive motorized classifications apply to wilderness lands near roads along the boundary.

The numbers and distribution of visitors in the wilderness are not yet completely documented. The majority of the known visitor use, as observed during BLM patrols, consists of sightseeing from vehicles on NM 117 and short walks into the northern portion of the wilderness by day hikers and photographers. Some use occurs in the southern end, mainly by hunters and visitors to the Dittert Site, but this portion of the wilderness is not as readily accessible. Key access points to the Cebolla Wilderness are La Ventana Natural Arch, The Narrows, Cebolla Canyon, Armijo Canyon and the Sand Canyon cherry-stemmed road.

The numerous canyons, mesas, ridges, and broad valleys that characterize the unit support a complicated pattern of open areas, ponderosa forests, piñon-juniper woodlands and grasslands. The high mesas provide vistas of volcanic fields extending for long distances. Sandstone bluffs and ridges rise above broad grassy valleys and alluvial fans. Visitors can find isolation from the sights and sounds of others in the broken and rugged terrain of the area.

La Ventana, one of the largest natural sandstone arches in New Mexico, is located in the Cebolla Wilderness just east of NM 117. The arch, which is visible from the highway, attracts people driving by and is within a short walk from the highway pullout and parking area. Along The Narrows, NM 117 is pinched between vertical sandstone cliffs and the surreal landscape of the lava flows, providing a spectacular drive for visitors traveling through the area. Southwest of The Narrows, the landscape broadens out into a flat meadow formed by the mouth of Cebolla Canyon. Here, seasonal clusters of gold and pink wildflowers provide appealing visual displays for highway travelers.

Wildlife species have benefitted from the varied habitats available within the wilderness. The mixed landscapes of the unit have created habitat edges where ecotypes have mixed and supported many wildlife species. The rimrock country and vertical sandstone escarpments are prime raptor nesting habitat. Birds of prey in the area include golden eagles, red-tailed hawks, prairie falcons and great horned owls, with peregrine falcons migrating through. Large mammals include mule deer, bears, coyotes, bobcats, foxes, and occasional mountain lions. The broad valleys support reptiles and many small mammals such as prairie dogs and badgers.

However, many vegetative communities in the wilderness are becoming stagnant or deteriorated. Human use and climate changes have altered the mix of plant species as well as their location. The more open grasslands have changed to grass-shrub communities and piñon-juniper woodlands. Additionally, woody species (primarily piñon and juniper trees) have increased in the ponderosa pine communities, decreasing the open parkland acreage. As the vegetative health of these crowded areas declines, the likelihood of disease, pestilence and fire increases.

The practice of suppressing natural fires has played a part in this change in vegetative communities, also resulting in increased fuel loads, increased soil erosion, and a loss of ecosystem and biological diversity. Before the 1800s, natural fires would occur about every 2 to 3 years, burning with a lower intensity in smaller patches. Now such fires have the potential to burn with a higher intensity, making them more difficult to control.

The Cebolla Wilderness contains nationally significant archeological sites in extremely high densities. Most of them belong to the prehistorical Pueblo Chacoan system or the related but more recent Acoma Cultural Province, but range in age from PaleoIndian (10,000 years ago) to historical. In addition, this area was an interface between the prehistorical Anasazi (Pueblo) culture to the north and the prehistorical Mogollon culture to the south.

The Dittert Site is a prehistorical community center with a Chacoan building, great kiva, and prehistorical roads located just inside the wilderness boundary at the mouth of Armijo Canyon. This site is listed on the National Register of Historical Places. Other key cultural resource properties that are wholly or partially within the Cebolla Wilderness are the Pinole Site and the Cebolla Canyon Community, which includes The Citadel. These are both large, fortified, Late Pueblo III aggregated villages. Petroglyphs and pictographs dating to Anasazi times also occur within the area.

The entire Cebolla Wilderness lies within areas claimed by Acoma Pueblo, the Hopi Tribe and the Navajo Tribe on the basis of traditional land use. In addition, portions of the area are claimed by the pueblos of Zuni and Laguna (Akins 1993).

The Acomas continue to maintain shrines within the area, and use it for other traditional cultural practices such as gathering herbs and hunting. The occurrence of several sweatlodges in the unit indicates Navajo use, which also includes hunting and piñon harvesting. Ongoing Laguna and Zuni uses of the Cebolla Wilderness have not been documented.

A number of well-preserved historical homestead sites are also found in this wilderness. These structures, which were generally used between 1920 and 1960, offer glimpses into a rural, self-sufficient way of life.

The Cebolla Wilderness overlaps three grazing allotments, El Malpais (#203), Los Pilares (#205), and Techado Mesa (#209--refer to Table 3-5 and Map 23 in the map section). A total of 7,530 Animal Unit Months (AUMs) are permitted in the wilderness.

Range improvements in the wilderness include fences, dirt tanks, pipelines, troughs, a windmill, and a spring development (refer to Map 33). Portions of

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TABLE 3-5

GRAZING ALLOTMENTS OVERLAPPING THE CEBOLLA WILDERNESS

Allotment Name	No.	Total Acres (public land)	Acres in Wilderness (public land)	%Acres Within Wilderness	Total AUMs	AUMs in Wilderness	%AUMs Within Wilderness
El Malpais	203	136,200	49,200	30	16,906	6,365	38
Los Pilares	205	15,700	9,400	60	1,761	1,060	60
Techado Mesa	209	35,100	2,900	8	4,765	426	9
	Totals	187,000	61,500	33	23,690	7,530	32

one pipeline system are located in the southeastern portion, while the other improvements are scattered throughout the wilderness.

P.L. 100-225 allows livestock grazing to continue within the Cebolla Wilderness in accordance with House Report 96-617 (Section 5, "Grazing in National Forest Wilderness Areas"). Range allottees within this wilderness are operating under a Range Improvement Maintenance (RIM) Plan and EA No. NM-017-89-31 (USDI, BLM 1990a; on file at the Albuquerque Field Office). The RIM Plan is the basis (through pre-authorization) for how, where, when, and by what methods range improvement maintenance using motorized equipment, motor vehicles, or other forms of mechanical transport is permitted within the wilderness. The plan also identifies authorized vehicle routes the allottees may use to access improvements.

BLM staff conduct on-the-ground patrols of the wilderness on a regular basis. These patrols provide opportunities for contacting and educating visitors about wilderness, as well as deterring use violations. Staff members record incidents of unauthorized use and visitor numbers, and monitor authorized uses. Signs have been placed around the wilderness to mark its boundary, and at previously used vehicle access points to inform visitors that the area is closed to motor vehicles, motorized equipment, bicycles and mechanical transport.

West Malpais Wilderness

This wilderness is located in the central portion of the Planning Area, as shown on Map 3 in Chapter 1. It consists of about 39,800 acres.

The West Malpais Wilderness is predominantly natural and exhibits outstanding opportunities for primitive and unconfined recreation. Human impacts consist of temporary disturbances of soil and vegetation in camp areas, and longer-term effects from livestock grazing improvements and access routes. Wilderness supplemental values include ecological complexity (where older basalt flows meet with more recent flows), scenic values, a variety of reptiles, antelope habitat, many species of birds, diverse lichens with research potential, and playa lakes.

This wilderness contains both federal and private surface and subsurface. When designated as wilderness in 1987, the area contained approximately 25,600 acres of private subsurface. By the end of 1995, the BLM had acquired all of this, except for about 500 acres in four parcels. The private surface inholdings (T. 7 N., R. 13 W., Sections 22 and 26) have been subdivided for cabin sites, and access crosses approximately 3/4 mile of Section 27, T. 7 N., R. 13 W. Several of the landowners have expressed interest in selling or exchanging their property.

For most of its length, the wilderness boundary either parallels roads or adjoins the National Monument boundary. Most of the National Monument has been found to possess wilderness characteristics and values; 86,267 acres have been identified as suitable for wilderness (USDI, NPS 1990a). Therefore, activities within the monument are not likely to degrade the quality of the wilderness experience for visitors to the West Malpais. Where the wilderness is bounded by CR 42 and a graded road, the boundary setback is 100 feet from the apparent centerline of the roads.

A graded road is "cherry-stemmed" out of the southeastern portion of the wilderness. This road travels in a northwesterly direction through Sections 2, 11, and 12 (T. 6 N., R. 12 W.) for approximately 2 miles to the intersection with the northern boundary of Section 2 (T. 6 N., R. 12 W.), where the wilderness boundary crosses the cherry-stemmed road.

The West Malpais Wilderness contains diverse resource values, including visual resources, various plant and animal species. Varied viewscapes are available to those visiting the wilderness. Volcanic plains form a low rolling terrain that offers broad, distant panoramas of volcanic fields, sandstone bluffs and ridges, and cinder cones.

The open panoramas without evidence of human imprint give the user a sense of isolation and solitude. Flowing, rolling, gently sloping lines dominate the near terrain and contrast with the broken lines of the more recent lava flows. This rolling terrain provides topographic screening that can buffer different user groups from each other.

Where older basalt flows meet with more recent flows, an ecological "edge effect" can be seen in the vegetation. This particular characteristic in the West Malpais Wilderness consists of a border of tall ponderosa pine undergrown with grasses, shrubs and piñon trees. This species combination or ecosystem does not occur elsewhere in this wilderness and supports wildlife diversity, particularly of birds and reptiles.

The lava soils and outcrops support at least 70 species of lichens of varied colors and textures. The diversity of these lichens is potentially interesting for research as well as being attractive to visitors. Lichen not yet classified may be present. A wide variety of cacti also exists.

The rolling, open prairie of grasses and shrubs supports antelope, which can often be sighted along CR 42. Wilderness designation provides some additional protection for these animals because motor vehicle use is not allowed. The prairie is also home to coyotes, jackrabbits, a variety of reptiles, and many species of birds not found in other types of habitats. These include open grassland birds such as sage sparrows, savannah sparrows, horned larks, grasshopper sparrows, harrier hawks, quail and burrowing owls. During rainy seasons, the old lava flows create numerous playa lakes that provide breeding grounds for invertebrates and amphibians, and make attractive loafing areas for a wide variety of birds, including migratory waterfowl.

An arm of the West Malpais Wilderness is Hole-in-the-Wall, an island ("kipuka") of ancient vegetated basalt flows surrounded by more recent flows (refer to Map 10). This area has figured both in legends and in western literature and probably will continue to attract hikers and overnight campers. Elk, deer, and antelope have been sighted in Hole-in-the-Wall. Abert's squirrels and many kinds of birds are also found there.

However, many vegetative communities in the wilderness are becoming stagnant or deteriorated. Human use and climate changes have altered the mix of plant species as well as their location. The more open grasslands have changed to grass-shrub communities and piñon-juniper woodlands. Additionally, woody species (primarily piñon and juniper trees) have increased in the ponderosa pine communities, decreasing the open parkland acreage. As the vegetative health of these crowded areas declines, the likelihood of disease, pestilence and fire increases.

The practice of suppressing natural fires has played a part in this change in vegetative communities, also resulting in increased fuel loads, increased soil erosion, and a loss of ecosystem and biological diversity. Before the 1800s, natural fires would occur about every 2 to 3 years, burning with a lower intensity in smaller patches. Now such fires have the potential to burn with a higher intensity, making them more difficult to control.

The ROS class for about 32,600 acres (82 percent) of the West Malpais Wilderness is semi-primitive non-motorized (refer to Table 3-2, Maps 3 and 6). The area offers opportunities for hiking, photography, backpacking, wildlife viewing and primitive camping. Opportunities for motorized use exist on non-wilderness lands adjacent to boundary roads.

The wilderness is overlapped by portions of four grazing allotments, Cerritos de Jaspe (#201), El Malpais (#203), Cerro Brillante (#207) and Los Cerros (#210--refer to Map 23). Of the total 26,914 AUMs permitted for use on these allotments, 5,018 AUMs are within the 39,300 acres of public land in the wilderness (refer to Table 3-6).

Range improvements in the wilderness include fences, dirt tanks, pipelines, troughs, windmills, corrals, and a line camp that includes a bunkhouse and corrals (refer to Map 34). The pipeline systems are buried in the western portion of the wilderness. The line camp is located in the southeastern corner, while the other improvements are located throughout the wilderness.

P.L. 100-225 allows livestock grazing to continue within the West Malpais Wilderness in accordance with House Report 96-617 (Section 5, "Grazing in National Forest Wilderness Areas"). Range allottees within this wilderness are operating under a RIM Plan and EA No. NM-017-89-25 (USDI, BLM 1990c--on file at the Albuquerque Field Office). The RIM Plan serves as the basis (through pre-authorization) for how, where, when, and by what methods range improvement maintenance using motorized equipment is allowed within this wilderness. The plan also identifies authorized vehicle access routes the allottees may use to access improvements.

Regular on-the-ground patrols of the wilderness are conducted by BLM staff, who record incidents of unauthorized use, number of visitors, and monitor authorized uses. These patrols provide opportunities for contacting and educating visitors about wilderness, as well as deterring use violations.

No trailheads, parking areas or trails have been constructed for accessing the West Malpais Wilderness. Vehicle access routes used before wilderness designation are being used to a limited extent for hiking and horseback riding. One primary access point is near the end of the cherry-stemmed road in the southeastern corner, where visitors park and enter the wilderness using an old vehicle route through the lava. Hole-in-the-Wall is their primary destination.

TABLE 3-6

GRAZING ALLOTMENTS OVERLAPPING THE WEST MALPAIS WILDERNESS

Allotment Name	No.	Total Acres (public land)	Acres in Wilderness (public land)	% Acres Within Wilderness	Total AUMs	AUMs in Wilderness	%AUMs Within Wilderness
Cerritos de Jaspe	201	20,000	900	5	1,497	126	8
El Malpais	203	136,200	28,700	21	16,906	3,567	21
Cerro Brillante	207	21,800	2,300	11	3,087	336	11
Los Cerros	210	40,100	7,900	20	5,424	989	18
Totals		218,100	39,300	18	26,914	5,018	19

Wilderness Suitability

Chain of Craters WSA

The Chain of Craters WSA is located within the western portion of the Planning Area (refer to Map 3 in Chapter 1). This WSA contains approximately 18,300 acres of publicly owned surface administered by the BLM, and no private surface. [Note: The acreage discrepancy between this figure and the 17,468 acres referred to in P.L. 100-225 results from more accurate compilations through the use of computerized Geographic Information Systems.]

The Chain of Craters wilderness suitability study is required by P.L. 100-225. The results of the study are included in a *Wilderness Analysis Report* (refer to Appendix I) and summarized below. The final wilderness recommendation coming from this study will be made through the Secretary of the Interior to the President followed by Congressional action. Only the Congress can designate the area as wilderness or release it from the wilderness review process. In the meantime, the BLM is managing the Chain of Craters WSA under the *Interim Management Policy for Lands Under Wilderness Review* (USDI, BLM 1995).

Existing Resources & Environment

The Chain of Craters gets its name from a series of volcanic cones and craters aligned along a large-scale zone of structural strain adjacent to the Continental Divide in the western portion of the Planning Area. The cones formed as volcanic debris was ejected from vents and built up steep-sided slopes. Many of the cones have collapsed along one side.

No perennial streams flow within the Chain of Craters. Unnamed ephemeral streams drain east and south away from the cinder cones into low-lying basins near the boundaries of the WSA. Most streamflow results from infrequent but intense storms and snowmelt. The WSA is part of a closed basin with no outflow of surface water.

The Chain of Craters contains three vegetative types, according to the Bailey-Kuchler classification system, ponderosa pine, piñon-juniper woodland, and grama-galleta steppe. (Note: The BLM has selected this U.S. land classification system because it assists in planning at a national level and combines current knowledge about the ecosystem geography of the country. It also serves as an overview of ecosystem and landform representation in the National Wilderness Preservation System.)

Existing & Potential Uses

The primary uses occurring in the WSA are livestock grazing, recreational activities, and traditional cultural practices by American Indian tribes. The WSA is also valued for its scenery, which is influenced by local landform and vegetative features.

At least three American Indian tribes (Acoma, Zuni, and Navajo) have close ties to the Chain of Craters. The WSA is part of a cultural landscape used by these groups to define and continue their culture and traditions.

Little specific information on Pueblo use of this area is available. Knowledge of many important places may be held by only a handful of people in a pueblo or tribe. Therefore, many specific places and practices pertaining to the Chain of Craters are unknown to the BLM, and continued consultation and coordination with the concerned American Indian groups is imperative.

The Ramah Navajos have expressed strong concerns about the Chain of Craters. Many Navajo shrines are believed to be present in the area. These places used for prayer may be important to the entire Navajo people or used only by an individual family. The Chain of Craters also includes specific areas where plants, birds, minerals and other natural substances are gathered for use in ceremonies, and more generalized areas where Navajos hunt, gather dye materials and pick nuts. The accessibility of these resources and places for prayer and other traditional uses is a concern to the Ramah Navajos, as it is to the Pueblos.

Recognizing that these groups have used the NCA in the past, the Congress through P.L. 100-225 guarantees them access for traditional cultural and religious purposes (consistent with the American Indian Religious Freedom Act and the Wilderness Act). P.L. 100-225 further provides that specific portions of the NCA can be temporarily closed to protect privacy for traditional activities.

Surveys conducted during the summer of 1989 indicate that prehistoric cultural remains are very sparse in the Chain of Craters WSA. However, homesteads and logging sites exist from the 1930s and 1940s; the BLM has fenced the Worley Homestead to protect it.

No mineral resources have been developed within the Chain of Craters WSA, and no mining claims or federal leases exist. With passage of P.L. 100-225, all federal minerals in the NCA were withdrawn from entry and development.

Portions of two BLM grazing allotments (Cerro Brillante, #207, and Los Cerros, #210) lie within the boundaries of the WSA (refer to Map 35). Each of these allotments contains range improvements (refer to Map 36). The current grazing use levels for these allotments are displayed in Table 3-7. The season of use for Cerro Brillante is yearlong and for Los Cerros it is 6 months.

Range improvements within both allotments include approximately 21.5 miles of wire fenceline, 17 dirt tanks, 16 troughs, 9 miles of buried water pipeline, two wellheads, and three 10,000-gallon, aboveground storage tanks. A water well was drilled on public land in 1981 (T. 7 N., R. 13 W., NW¼ Section 34) within ¼ mile of CR 42 on the east side of the WSA. During 1994 and 1995, all the buried pipeline was replaced so livestock would have a reliable water distribution system.

Records of logging in the Chain of Craters date from 1948 through 1975 (with the majority of cutting occurring before 1959), during which 22 contracts were awarded for the harvest of 6,353 million board feet of timber. However, designation of the WSA as part of the NCA in 1987 retired commercial timber production as a potential use. P.L. 100-225 prohibits timber harvest and the collection of green or deadwood products for sale or other commercial purposes.

Under the most current recreation (ROS) inventory, the BLM has classified the Chain of Craters WSA as roaded natural, semi-primitive motorized, and semi-primitive non-motorized (refer to Map 6 and Table 3-2). The portion of the study area that borders CR 42 is considered roaded natural because the road is maintained by the county. (Note: The condition of CR 42 limits accessibility during wet weather.)

The amount of recreation use in the Chain of Craters has not been quantified. Hunting is known to take place; in recent years BLM employees have encountered deer hunters during patrols. The WSA offers opportunities for recreational uses including sightseeing, day hiking, mountain biking along old vehicle routes, backpacking, camping, semi-primitive motorized touring, and horseback riding. Opportunities also exist for birdwatching, landscape and nature photography, and observation of geologic features.

In the Rio Puerco RMP (USDI, BLM 1986), the BLM limited motorized vehicle use in the Chain of Craters to existing vehicle ways. Approximately 46.5 miles of inventoried vehicle travel routes exist within the WSA (refer to Map 18). A selected route for the CDNST also passes through the Chain of Craters.

Two wildlife exclosures are located within the Chain of Craters, both in T. 7 N., R. 13 W. One exclosure in Section 17 is located in ponderosa parkland between two cinder cones. This exclosure contains an inverted umbrella (a water collection device for wildlife). The other exclosure is located in Section 19 in a rabbitbrush flat. Water is available from a dirt tank located just south of this exclosure.

Wilderness Criteria

The quality of mandatory wilderness characteristics of the Chain of Craters WSA (size, naturalness, and opportunities for solitude or primitive and unconfined recreation) is documented in the *Wilderness Analysis and Suitability Report* (refer to Appendix I). The area meets the size requirement of the Wilderness Act (having at least 5,000 acres). The WSA contains livestock grazing use and improvements, an extensive vehicle route network, and past logging activities. This human work, which is widespread throughout the WSA, noticeably decreases its naturalness.

Manageability

Land ownership along the margins of the WSA (Ramah Navajo on the western border, and other private owners on the northern and eastern borders)

TABLE 3-7

GRAZING ALLOTMENTS OVERLAPPING THE CHAIN OF CRATERS WSA

Allotment Name	No.	Total Acres (public land)	Acres in WSA (public land)	% Acres Within WSA	Total AUMs	AUMs in WSA	% AUMs Within WSA
Cerro Brillante	207	21,800	2,600	12	3,087	370	12
Los Cerros	210	40,100	15,700	39	5,424	2,115	39
Totals		61,900	18,300	30	8,511	2,485	29

may present management problems. The potential for trespass onto private or tribal land by wilderness users exists, although trespass could occur regardless of wilderness designation. The proximity of the subdivided quarter-section to the north of the WSA could intrude on the area's visual qualities if development took place.

Because of historical ties, uses of the area by local Pueblo and Navajo Indians, and the nature of Navajo traditional cultural practices, the BLM cannot effectively administer the Chain of Craters as wilderness without serious conflicts. Prohibition of access by motorized vehicle would cause significant hardships in carrying out traditional cultural practices, which are not confined to specific localities, times of year, or designated individuals. P.L. 100-225 allows for nonexclusive access by American Indian people for traditional and religious purposes as long as it is consistent with the intent of the Wilderness Act. However, the act also generally prohibits the use of motor vehicles and motorized equipment. Under these circumstances, it would be extremely difficult to establish an administrative procedure to allow vehicular access into wilderness or define when vehicle use is appropriate for cultural and religious purposes without being in violation of the Wilderness Act. Special provisions for this area in wilderness legislation would be required.

Lands Contiguous to the Cebolla Wilderness

These lands are located contiguous to the boundaries of the southern portion of the Cebolla Wilderness (refer to Map 25). Since the designation of this wilderness in 1987, the BLM has acquired approximately 8,200 acres of contiguous private land. The agency is now inventorying this public land with other parcels (2,180 acres, for a total of 10,380 acres) and studying it for wilderness suitability. (Without the acquired land, the isolated public land parcels were not contiguous to an existing wilderness nor of sufficient size to meet the wilderness criteria.)

Existing Resources & Environment

These contiguous lands are an extension of the characteristic landscape of the Cebolla Wilderness, including mesas, canyons, ridges and broad valleys covered with conifer forests, piñon-juniper woodlands, and grasslands. The contiguous lands in the North Pasture area at the mouth of Cebolla Canyon and along the western edge of the wilderness are characterized as open terrain with gentle grassland slopes. Those lands in the Sand Canyon drainage, and on the north end of the mesas at the mouth of Sand Canyon, are broken terrain (steep slopes with rock outcrops) with conifers, grasses and shrubs. The mesas and ridges rising above the grassy valleys and alluvial fans offer a variety of scenic vistas.

The mixed character of the area provides varied habitats for wildlife. Birds of prey include golden eagles, red-tailed hawks, prairie falcons and great horned owls, with peregrine falcons migrating through. Large mammals include mule deer, bears, coyotes, bobcats, foxes, and mountain lions. The broad valleys support reptiles and many small mammals such as prairie dogs and badgers. No threatened or endangered animal or plant species are known to exist on the contiguous lands. If any of these species were located here, the BLM would protect them by complying with appropriate laws and regulations.

This area contains nationally significant archaeological sites in extremely high densities. The Dittert Site, which lies just inside the western boundary of the Cebolla Wilderness and is listed on the National Register of Historical Places, is a prehistoric community with a Chacoan building, great kiva and two prehistoric roads. Vehicle access to the wilderness boundary near this site is through the contiguous lands.

Geologically the contiguous lands are located between the structural high of the ancestral Zuni Highlands on the west and the structural low of the Acoma Sag to the east. A few northwest-trending faults exist. Sedimentary rocks of the Cretaceous Age crop out within the area and dip at low angles to the east. These rocks represent the uppermost units of a sedimentary section that ranges from Pennsylvanian to Cretaceous in age.

Deposition in the area began when the Pennsylvanian marine environment encroached upon the granitic/metamorphic Zuni Highlands. The highlands served as a sediment source, so the Pennsylvanian rocks include sandstones, shales, and marine carbonates. Permian Age rocks consist of both continental and marine deposits. Continental environments (floodplains, rivers, lakes and dune fields) existed through most of the Triassic and Jurassic periods. Transitional marine environments alternated with the open marine deposition through Cretaceous time, resulting in the intertongued Dakota Sandstone and Mancos Shale. With the Crevasse Canyon Formation, this sandstone and shale form the cliffs and valleys of the contiguous lands.

The Pennsylvanian section, which underlies the contiguous lands, has petroleum potential because both source rocks and reservoir rocks were deposited during Pennsylvanian time (Broadhead 1986). The contiguous lands lie within an area that has been classified as having moderate potential for oil and gas development (McLemore *et al.* 1986), but has no proven reservoirs. The possibility of both stratigraphic and structural hydrocarbon traps exists.

The Upper Cretaceous Crevasse Canyon Formation crops out over much of the contiguous lands and contains carbonaceous shales and thin coal beds. Coal potential is considered low because the beds are thin (Bigsby and Maxwell 1981). The area also has a low resource potential for undiscovered metals, oil and gas, and geothermal energy.

Geologic conditions that could produce carbon dioxide gas exist in the area, but no exploration has occurred. The gas may form when the igneous rocks intrude into carbonate rocks, causing gas to be released by heating. If stratigraphic or structural traps exist, the gas may exist in quantity, although its economic value depends on nearby developed oil fields or a pipeline for shipment.

Existing & Potential Uses

The contiguous lands are being used primarily for grazing, recreation and wildlife habitat. Scattered evidence exists of human imprints on the contiguous lands from existing and past uses (refer to Appendix J for inventory findings). The 62,000-acre Cebolla Wilderness is considered predominantly natural, with opportunities both for solitude and primitive and unconfined recreation, so its presence would add to the wilderness suitability of the contiguous lands.

The diverse broken terrain, variety of wildlife habitat, dramatic vistas, and prehistoric and historical resources extending from the Cebolla Wilderness into the contiguous study lands support non-motorized and dispersed types of recreation. The area offers opportunities for uses such as hiking, primitive camping, backpacking, hunting and photography, all of which are ongoing (based on BLM staff observation and personal contact made with visitors during areal patrols). The amount of recreation use occurring on the contiguous lands and within the adjacent wilderness is unknown. However, because people are becoming more aware of the area and its closeness to Albuquerque, recreational use of the area is expected to increase.

The contiguous lands are within one grazing allotment (El Malpais, #203) whose season of use is yearlong. This grazing allotment has 51,200 acres of public land in the Cebolla Wilderness and 28,700

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public acres in the West Malpais Wilderness or 59 percent of its total acreage within wilderness boundaries. Range facilities on the contiguous lands consist of fencelines, windmills, dirt tanks and troughs (refer to Appendix J).

No mineral resources have been developed within the contiguous lands. If oil and gas exploration and development were to take place, any carbon dioxide present would become more valuable because of its use in the secondary recovery of oil. No mining claims or potential for locatables exists. The BLM is attempting to acquire the subsurface mineral estate in this area in accordance with the Land Protection Plan (USDI, BLM 1989b). If acquired, this estate would be withdrawn from mineral leasing and development in accordance with P.L. 100-225.

The Cebolla Canyon Road (designated as BLM Road 2003), which separates the northern portion of the Cebolla Wilderness from the southern portion, is used by ranchers, recreationists and the BLM. This graded road is receiving periodic maintenance, but is subject to erosion because it parallels the drainage in Cebolla Canyon. Consideration has been given to rebuilding part of the road to prevent additional resource damage from erosion and vehicle use.

Wilderness Criteria

The most noticeable imprint of humans on the contiguous lands comes from graded roads and routes that have developed through continued use, including 31 miles used to access livestock grazing facilities, and from the grazing facilities themselves. A majority of these facilities are located within Cebolla Canyon on terrain of low rolling hills with a vegetative cover of shrubs and grasses. Other facilities are located between CR 41 and the western wilderness boundary on the formerly private lands. Many fences are extensions of allotment and pasture fences already existing in the wilderness, and some routes serve as wilderness boundaries. Overall, these human imprints are scattered throughout the contiguous lands, and some are screened by landforms and vegetation, so they do not significantly detract from the area's naturalness.

In the western and northern portions of these lands, the open terrain and low-growing vegetation provide very little visual screening and few opportunities to find isolated locations for solitude. However, elsewhere screening and isolation can be found in broken terrain (steep canyons and mesas) with conifers, grasses and shrubs. Such areas include the Sand Canyon drainage, the north end of the mesa at the mouth of Sand Canyon on the west side, the southern end of the contiguous lands, and the land along Cebolla Canyon.

As on the adjoining Cebolla Wilderness, many special features are present. They include scenic and cultural values, elements of scientific and educational value, and a diversity of wildlife.

The contiguous lands have opportunities for a diversity of primitive and unconfined recreation. When combined with the existing Cebolla Wilderness, the contiguous lands would provide a larger area in which visitors could pursue such activities.

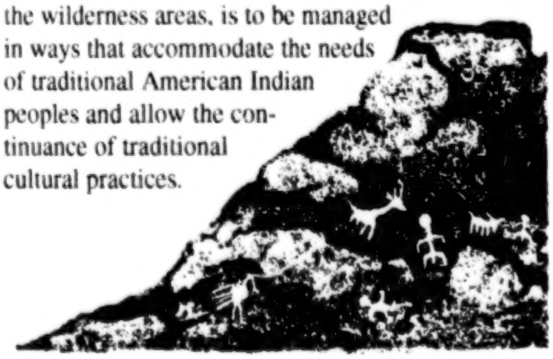
Manageability

Some of the contiguous lands reviewed in this plan are not considered manageable for wilderness because they are subject to outside sights and sounds from traffic and uses of county and state roads. Some lands do not possess scenic, scientific, and recreational values that supplement or complement those of the Cebolla Wilderness.

AMERICAN INDIAN USES & TRADITIONAL CULTURAL PRACTICES

Introduction

A diversity of deeply rooted cultural traditions is one of the special characteristics New Mexico offers to both local citizens and visitors. In P.L. 100-225, the Congress made it clear that the NCA, including the wilderness areas, is to be managed in ways that accommodate the needs of traditional American Indian peoples and allow the continuance of traditional cultural practices.



Navajo Uses of the Planning Area

The Ramah Navajo Indians have expressed strong interest in the Planning Area. Past Navajo uses of the area include plant gathering, hunting and probable livestock herding. Numerous sweatlodges of presumed Navajo origin occur throughout the Planning Area. Portions of the lava that have mythological importance are also found. For example, the recent lava flow known as the "black rock area" is important because it is mentioned in the Navajo curing ceremony, Monsterway. These lava flows are the hardened blood of Yeitso, the chief of the enemy Yei, who was killed by the Hero Twins near Mount Taylor. In addition to places of mythological importance, it is likely that prayer locations and other places of religious importance to the Navajos occur here as well.

Pueblo Indian Uses of the Planning Area

The Planning Area is believed to contain numerous places important in the Acoma and Laguna religions, including lava flows, shrines, high points, water sources, caves, and pilgrimage routes. Both Acoma and Laguna people maintain shrines in the Planning Area. The majority of tribal members may not visit or even know of these places, but they are important to the entire pueblo.

The numerous Anasazi habitation sites within the Planning Area are recognized by Acoma people as ancestral villages. Burials associated with these sites are regarded as the remains of ancestors. It is important to Acoma people that these sites remain undisturbed by human activity. The Acomas collect plant materials such as herbs, Douglas fir boughs, piñon nuts, and Rocky Mountain beeweed in the Planning Area. Acoma potters also collect sherds from prehistorical pots to be crushed and added to pottery clay as tempering material, a practice dating back at least a thousand years.

In accordance with the wishes of these groups, the BLM does not actively manage any sites or areas for traditional American indian uses. Instead, the agency seeks to keep these groups informed about major activities proposed within the Planning Area, giving them time to respond if traditional uses are likely to be affected.

CULTURAL RESOURCES

Introduction

The Planning Area includes a wealth of archeological and historical remains. Not only are these sites important from a scientific point of view, but some are well preserved and could be of considerable interest to the general public. Prehistorical remains in the Planning Area are also very important to American Indians who recognize them as ancestral places.

Inventory

Archeological remains have been reported in the Planning Area since the middle and late 1800s, but intensive study of this area did not begin until the late 1940s and early 1950s. During this time, Reynold Ruppe and Alfred Dittert directed reconnaissance and excavation along the western flanks of Cebollita Mesa. Most of what is known about the prehistory of this area comes directly from these studies.

Additional archeological survey has been completed in conjunction with proposed land-disturbing projects, and in the course of BLM-sponsored inventories to obtain baseline information about the Planning Area's cultural resources. To date, intensive (Class III) cultural resources inventory information is available for about 2 percent of the Planning Area and adjacent units (5,636 acres). The inventories are summarized in Table 3-8.

PaleoIndian Period

The earliest human use of the Planning Area's region may have been as long as 12,000 years ago, near the end of the last major Ice Age. This occupation, known as the PaleoIndian period, was based in part on the hunting of animals that are now extinct. Archeological sites of this age usually consist of low-density scatters of stone artifacts; the sites are recognized as PaleoIndian only if projectile points or certain other diagnostic stone tools are found. Although PaleoIndian sites have been recorded on lands east and west of the Planning Area, very little evidence of such occupation has been found in the area itself.

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Archaic Period

By about 7,500 years ago, the Ice Age had ended and the climate was becoming warmer and dryer. With shifts in climate came new economic and social strategies that were based on gathering a wide range of plants and hunting a variety of game animals. This period is known as the Archaic Period, which is characterized by a well-organized and complex round of migrations based on seasonal availability of a broad spectrum of plant and animal resources. The Archaic Period lasted until about A.D. 400 and is divided into five successive phases distinguished on the basis of projectile points.

Sites of the Archaic Period usually consist of scattered stone chips and tools. Occasionally, careful excavation yields evidence of pithouses or brush structures. Artifacts from Archaic Period sites include projectile points, scrapers and grinding stones.

This period is not well represented in the Planning Area, where only 20 Archaic components have been recognized.

TABLE 3-8

CLASS III CULTURAL RESOURCE SURVEYS WITHIN & ADJACENT TO THE EL MALPAIS PLANNING AREA

Unit [*]	Acres Surveyed	% Surveyed
Cebolla Wilderness	2,192	3.5
West Malpais Wilderness	331	.8
Chain of Craters WSA	617	3.4
Brazo	608	2.1
Breaks	415	6.4
Cerritos de Jaspe	416	3.3
Cerro Brillante	321	.9
Continental Divide	214	.9
Neck	137	.5
Spur	109	1.9
Brazo Non-NCA	64	.01
Breaks Non-NCA	64	.01
Techado Mesa-SFO	66	.6
Tank Canyon-SFO	82	.7

Note: [*] No Class III surveys have been done in the Cerro Brillante-AFO and Continental Divide-AFO Units.

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Pueblo Period

Late Archaic peoples had some knowledge of agriculture, but relied only casually on crops for their livelihood. By about A.D. 700, settlements of people who relied heavily on agriculture were common. These groups raised corn, beans and squash, and supplemented their diets by hunting and gathering wild plants. They are known as the Pueblo or Anasazi, and their development can be traced through time to the present-day Pueblo Indians. Sites of the Pueblo Period include rock art, pithouses, remains of masonry and jacal (brush) buildings and simple artifact scatters.

The Pueblo Period can be divided into eight successive phases based upon changes in pottery styles and other characteristics. Earlier phases are characterized by ceramic (pottery sherd) and lithic (stone and flake) scatters and occasionally by pithouses. By about A.D. 850, small surface houses were predominant, sometimes grouped around a great kiva. Later, around A.D. 1050, these communities sometimes included a large building with certain Chacoan characteristics such as massive masonry, extremely large rooms, blocked-in kivas and prehistorical "roads."

After A.D. 1150, a shift occurred from small individual family residences to larger multifamily dwellings. This trend culminated in a handful of large pueblos with 100 to 400 rooms. By around A.D. 1400, most of the Planning Area had been abandoned as an area of primary residence. Undoubtedly it continued to be used by American Indian peoples for hunting, gathering, and other traditional purposes.

Two very striking patterns are apparent for the Pueblo Period. First, the overwhelming majority of sites date to the late Pueblo II and early Pueblo III periods (between A.D. 1050 and 1200). There can be little doubt that the major period of Anasazi occupation in the Planning Area occurred during these times.

The second striking pattern is the strong concentration of Anasazi sites along the NM 117 corridor. This is shown dramatically in Map 37, which shows estimated site densities.

The Anasazi sites are of concern to local American Indian groups, especially the Acomas. These sites are recognized as the past homes of Acoma ancestors and can be sources of spiritual power and rejuvenation. The Acomas also collect potsherds from these sites to be crushed and used as temper by contemporary Acoma potters.

Traditional American Indian attitudes toward excavation of the Anasazi ruins are diverse. The Acomas feel strong ties to these sites and prefer that they not be disturbed. Disturbance directly related to the ongoing history of the Acoma people is accepted with some reluctance, but excavations that result from other construction, pothunting, or scientific investigation are strongly opposed.

The Navajos view prehistorical ruins (and other abandoned habitations) as places of spiritual danger. They are concerned that disturbance of these places can cause misfortune, both to individuals and to whole peoples.

Historical Times

Anglo-European use of the Planning Area's region began with the entry of Francisco Vasquez de Coronado in 1540. However, it was not until the construction of the Atchison, Topeka and Santa Fe Railroad through the Malpais in 1881 that intensive Anglo-European use of the region began in earnest. Homesteading may have begun as early as 1916, but the development of the logging industry in the late 1920s really stimulated rural settlement in the Planning Area. Most historical sites in the Planning Area are sawmills, logging camps and homesteads dating between the 1930s and the 1960s.

Management Actions

Certain cultural resource properties are frequently referred to by name in this document. These particular places have been the focus of management attention or figure prominently in management actions proposed under one or more alternatives in this plan. These sites are described briefly in Table 3-9.

The BLM has an active program of cultural resource management in the Planning Area. Several

TABLE 3-9

MAJOR CULTURAL RESOURCE SITES IN THE PLANNING AREA

Site Name	Unit	Description
Aldridge Petroglyphs	Cebolla Wilderness	Extensive rock art panel
Armijo Canyon Homestead	"	Stabilized homestead-era residence
Armijo Canyon Springhouse	"	Stabilized homestead-era springhouse associated w/ Armijo Canyon Homestead
Cebolla Canyon Community--includes:	Breaks & Cebolla Wilderness	Major prehistorical Anasazi community w/principal occupation A.D. 800-1325. Over 50 buildings.
• Arroyo Ruin	Breaks	Buried 20-room Anasazi pueblo occupied A.D. 1125-1175. Focus of erosion control measures.
• The Citadel	Cebolla Wilderness	60-room Anasazi pueblo occupied A.D. 1250-1325
• Oak Tree Ruin	Breaks	Stabilized 40-room Anasazi pueblo occupied A.D. 1250-1325
Cebolla Canyon Schoolhouse	Cebolla Wilderness	Homestead-era schoolhouse & community center
Cerritos de Jaspe Community	Cerritos de Jaspe	Dispersed prehistorical Anasazi community primarily occupied A.D. 950-1125. Includes 30-45 individual pueblos, each having up to 20 rooms.
Dittert Site	Cebolla Wilderness	Stabilized Anasazi masonry pueblo built as Chacoan Outlier, occupied ca. A.D. 1150-1300. In Armijo Canyon Community.
Lobo Canyon Petroglyphs	"	Extensive rock art panel
Newton Site	Tank Canyon	165-room Anasazi pueblo occupied A.D. 1200-1325
Pinole Site	Cebolla Wilderness	100-room, fortified Anasazi pueblo occupied A.D. 1100-1325
Ranger Station Reservoir	Spur	Prehistorical Anasazi reservoir used A.D. 1200-1325
Rowe Homestead	Breaks	Homestead-era residential site
Stone House	Cebolla Wilderness	Homestead-era residential site
West Malpais Schoolhouse	West Malpais Wilderness	Homestead-era schoolhouse
Worley Homestead	Chain of Craters WSA	Homestead-era residential site

major inventory projects have been undertaken to document the location and baseline condition of archeological sites in critical or poorly known areas. These projects include Class III inventories in Cebolla Canyon and Armijo Canyon, and major Class II inventories in the Cerritos de Jaspe area and other parts of the Planning Area. Inventories have documented a number of the historical homesteads, and an ongoing volunteer project will record all the Planning Area's known rock art. Finally, the BLM and the NPS have interviewed a number of long-time residents, recording approximately 26 hours of oral histories.

Formal monitoring programs have been implemented for three prehistorical ruins: the Dittert Site, Arroyo Ruin, and Oak Tree Ruin. This activity consists of taking a series of standardized photographs each year so that any changes in site condition can be detected and corrective action taken. Since 1988, Park Rangers on the NCA staff have actively patrolled the area. In recent years the BLM has been involved in two investigations of violations of the Archeological Resources Protection Act, and has successfully prosecuted a case involving theft of building stone from a historical homestead.

Physical protection measures implemented in the Planning Area include erosion control, stabilization and fencing. The BLM has installed erosion control structures to retard erosion of the Arroyo Ruin in Cebolla Canyon, and stabilized two prehistorical, masonry structural ruins, the Oak Tree Ruin and the Dittert Site. The agency has also completed a stabilization assessment for eight historical homesteads in the Planning Area, and major historical stabilization projects at the Armijo Canyon Homestead and Springhouse. To prevent livestock damage and theft of materials, fences have been built around five historical homesteads.

The BLM has also begun to interpret cultural resources in the Planning Area. Many of the exhibits in the Ranger Station highlight cultural resources, and each year BLM employees lead half a dozen or so guided hikes to archeological and historical sites. Cultural resources are also incorporated into an ongoing environmental education program in the Grants public schools.

WILDLIFE HABITAT

Introduction

The Planning Area provides a wide variety of habitats that support diverse populations of wildlife, including over 30 species of mammals, more than 60 species of birds for at least part of the year, and many species of reptiles, amphibians and invertebrates. The diversity of slope and terrain, vegetation, and sandstone and lava formations provides these important wildlife habitats. A list of vertebrate species likely to occur within the region of the Planning Area is found in Appendix F.

Water availability for wildlife is limited throughout the Planning Area, making all waters of special concern. Several wildlife waters and exclosures have been completed in various areas to benefit wildlife, as shown in Table 3-10. Waters developed primarily for livestock also provide an important water supply for wildlife, especially in the wilderness units. Dirt tanks scattered throughout the Planning Area provide water on an intermittent basis.

Habitats in the Planning Area are dispersed over the landscape in a patchwork pattern that provides large areas of "edge," where one habitat blends into another. The large number and size of these edge areas adds to habitat complexity and increases wildlife species diversity.

Species Management

The BLM supports state management plans for those game species that state law defines to be of economic or public value. Species emphasized in the Planning Area because of interest by the NMDG&F include pronghorn antelope, mule deer, elk, turkey, Abert's squirrel, quail, mourning dove and waterfowl. Management objectives for these species are found in the *Operations Plan for Terrestrial Wildlife* (NMDG&F 1987). Other vertebrate species of high federal, state, or public interest include the special-status species (refer to the "Threatened and Endangered Species" section below), prairie dogs, raptors, neotropical migratory birds, black bears, cougars and coyotes. The wildlife program for the Planning Area focuses on these key species and their habitats.

Hunting and trapping continue within the Planning Area, where the NMDG&F manages the hunting seasons for elk, mule deer, pronghorn antelope, black bear, mountain lion, turkey, mourning dove, waterfowl and Abert's squirrel. Mule deer can be found throughout, generally associated with the piñon-juniper woodlands and forest habitats. Rocky Mountain elk reside mainly in the ponderosa pine forest habitats located in the Cebolla Wilderness, Chain of Craters WSA, Continental Divide and Brazo Units.

TABLE 3-10

PROJECTS COMPLETED UNDER THE EL MALPAIS WILDLIFE HABITAT MANAGEMENT PLAN

Project Name	Unit	Location	Year Completed	Purpose
York Wildlife Seeding Exclosures	Brazo	T. 4, 5 & 6 N., R. 10, 11 W.	1967	Protect seedings for wildlife use
Bighole Inverted Umbrella #3	West Malpais Wilderness	T. 7 N., R. 11 W. Sec. 8, SE¼SE¼	1982	"
York Inverted Umbrella & Exclosure	Cerro Brillante	T. 6 N., R. 12 W. Sec. 30, SW¼NW¼	1982	"
La Rendija Inverted Umbrella	Continental Divide	T. 8 N., R. 12 W. Sec. 5, NE¼SW¼	1982	"
Malpais Swale Exclosure	West Malpais Wilderness	T. 7 N., R. 12 W. Sec. 29, NW¼NW¼	1982	Reduce livestock use of spring forbs to improve antelope habitat
Laguna Brillante Exclosure	Cerro Brillante	T. 6 N., R 13 W. Sec. 3, NE¼SE¼	1982	"
Laguna Americana Exclosure	Continental Divide	T. 8 N., R. 13 W. Sec. 13, NW¼NE¼	1982	Protect riparian habitat by excluding livestock
Cerro Chato Exclosure & Wildlife Water	Chain of Craters WSA	T. 7 N., R. 13 W. Sec. 17, SW¼NE¼ Sec. 19, SW¼SE¼	1982-83	Improve mule deer habitat & protect water from livestock use
Cerro Americano Parabolic Guzzler & Exclosure	Continental Divide	T. 8 N., R. 13 W. Sec. 11, NW¼SE¼	1984-85	Improve mule deer habitat
Cebolla Spring Exclosure	Brazo	T. 5 N., R. 10 W. Sec. 12, NW¼NW¼	1995	Protect riparian habitat & spring source from livestock use

Pronghorns occur predominantly in the shrub-grasslands of the Cerro Brillante Unit. Access into the wilderness areas for hunting or trapping is limited to foot or horseback.

The most common predator found in the Planning Area is the coyote, which is considered to be abundant throughout. Other predators include bobcats, grey foxes, and a limited number of mountain lions.

Birds of prey (raptors) vary in abundance depending on the availability of a prey base. The numerous bluffs within the Spur Unit and Cebolla Wilderness provide nesting habitat for the golden eagle, red-tailed hawk, kestrel, great-horned owl, prairie falcon and an occasional peregrine falcon. Upland gamebirds include the mourning dove (widespread throughout the Planning Area), quail (occurring in the shrub-grassland community) and Merriam's turkey (mainly found in the ponderosa pine forest habitat).

The only habitats considered to be wetlands within the Planning Area are playa lakes, which are ephemeral (temporary) and dependent on annual precipitation, and small marshy areas associated with natural springs. Waterfowl (e.g., mallards, pintails) and shorebirds (e.g., killdeer, spotted sandpiper) use natural springs, stock tanks and ephemeral water sources for resting and feeding during migration. Along the northern portion of NM 53 adjacent to the Neck Unit, a pond fed by Ojo del Gallo (a spring) attracts waterfowl and shorebirds to the area. Although the majority of the land covered by the pond is private, it provides unique wildlife habitat not found over most of the Planning Area. Limited nesting occurs in areas where sufficient water and cover exist.

Vegetative/Habitat Communities

Each animal species requires three elements for its existence--food, water and cover. Food and water are required to sustain the basic functions of growth, maintenance, and reproduction. Cover is vegetation, space, or landforms used by wildlife for protection from predators or the extremes of weather.

A habitat is a place where an animal finds the required arrangement of food, water and cover to meet its biological needs. Different species of animals require different combinations of these three elements. Certain habitats are especially important to wildlife because they are in limited supply, provide essential combinations of habitat factors during critical portions of a life cycle, or allow protected access to preferred habitats during seasonal migrations. Within the Planning Area, lack of certain habitat attributes may limit wildlife species occurrence in what otherwise appears to be suitable habitat.

Regardless of where it is located in the Planning Area, a particular vegetative community can support similar wildlife species diversity, and responds to management actions in a similar manner. Therefore, vegetative communities are reviewed when deciding where and how wildlife habitat enhancement, maintenance and protection measures should be implemented. Using satellite-gathered data, the BLM has classified the NCA's vegetation into three broad communities (Grass-Shrub, Piñon-Juniper and Ponderosa Pine).

Grass-Shrub Community

This vegetation is found in large blocks of the Neck, Cerro Brillante, and southern portion of the West Malpais Wilderness. It is also found in smaller scattered parcels throughout the Cebolla Wilderness, Breaks and Spur Units, where it blends with piñon-juniper. In the rolling hills of the Cerro Brillante Unit are found pronghorn antelope, jackrabbits, cottontails, and a variety of birds, including quail. An occasional glimpse of pronghorn antelope is available along CR 42.

The uneven topography of the old lava flows within this grass-shrub vegetation creates numerous playa lakes during the rainy season, which offer an ephemeral water supply that supplements developed waters. These lakes provide breeding grounds for invertebrates and amphibians, and make attractive resting areas for a wide variety of birds, including migratory waterfowl. Soils in parts of these areas are deep enough to support small burrowing mammals such as prairie dogs, which are a food supply for raptors. Such holes also provide habitat for burrowing owls.

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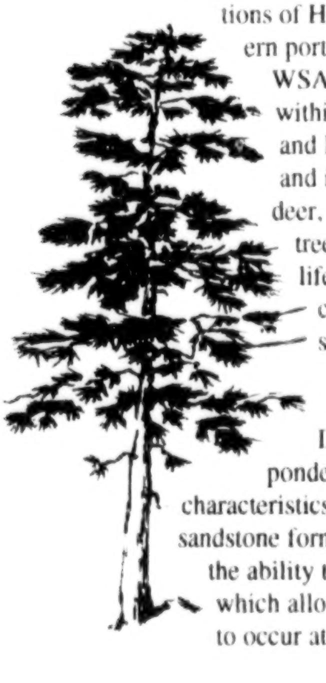
Piñon-Juniper Community

This vegetation covers large portions of the Continental Divide, Chain of Craters, Cerro Brillante, Cerritos de Jaspe, Spur, Cebolla Wilderness and Brazo Units. Large, uniform stands of piñon-juniper characterize these areas, as well as smaller clumps of the trees scattered through grassy meadows. This mixture of habitats is attractive to mule deer, turkey and many species of birds, and provides cover for wildlife during severe weather.

Along the western edge of these areas in the Spur Unit and the Cebolla Wilderness, large sandstone buttes rise above the grassy valleys and lava flows. The cliffs provide nesting sites for golden eagles, prairie falcons and peregrine falcons, and on occasion, cougars, elk, and bears have been spotted. The area is especially rich in winter resident and migrating birds, and its piñon pine trees often produce heavy crops of nuts valued by visitors as well as wildlife.

Ponderosa Pine Community

This vegetation occurs throughout the Planning Area on sites where the appropriate conditions exist. These sites are dominated by ponderosa pine with understories of shrubs (e.g., currant, oak, mountain mahogany, raspberries), grasses, forbs, quaking aspen and rock outcrops. The vegetation covers large portions of Hole-in-the-Wall, the northern portion of the Chain of Craters WSA, and the higher elevations within the Cebolla Wilderness and Brazo Unit. It is attractive and important habitat for mule deer, turkeys, Abert's squirrels, tree- and hole-nesting wildlife, coyotes, and many species of birds. Elk also are seen occasionally.



In some areas scattered Douglas fir occurs with the ponderosa pine. Landform characteristics such as mixed lava and sandstone formations give some areas the ability to trap and hold water, which allows for the two large trees to occur at elevations much lower than they usually are found. Small areas of classic ponderosa parkland exist at higher elevations in the Planning Area, characterized by widely spaced, large adult (300+ year-old) trees in grassy meadows with few shrubs.

Special-Feature Habitats

In addition to the three broad vegetative communities, numerous unique, special-feature habitats exist within the Planning Area (e.g., volcanic plains, cinder cones, caves, riparian wetlands). Except for the lava flows, these special habitats are generally confined to small areas scattered throughout the three larger communities.

The cinder cones and volcanic plains of the Continental Divide Unit, Chain of Craters WSA and West Malpais Wilderness create a complicated pattern of vegetation and terrain. This combination provides habitat for mule deer, coyotes, bears, many species of reptiles, and game birds such as turkeys and doves. Caves and riparian-wetland habitats offer small but very important microhabitats for numerous wildlife species including bats, waterfowl, shore birds, reptiles, amphibians and migratory songbirds.

THREATENED, ENDANGERED & OTHER SPECIAL-STATUS SPECIES

Introduction

Seven federally listed threatened or endangered, 1 proposed endangered, 2 federal candidate, and 18 species of concern (BLM sensitive) are known or potentially could occur on public lands within the Planning Area (USDI, FWS 1995). In addition, 12 species listed by the State of New Mexico as threatened or endangered also are known or potentially could occur. Appendices F (wildlife) and G (plants) provide lists of these species.

Informal consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act is in progress.

Species Management

Listed and federal candidate species that are known to occur within the Planning Area include the bald eagle, peregrine falcon and mountain plover. The Planning Area is outside the bald eagle's normal range (along the Rio Grande corridor), but the birds have been observed migrating through the area. The American peregrine falcon is known to nest within the Planning Area. In 1994, a pair of adults were observed at a nest site on several occasions, but the available information indicates the nesting attempt failed. In 1995 and 1996, additional sightings of adult birds were made by NMDG&F employees near the 1994 nest site, but no nesting attempts were confirmed. The mountain plover was identified in a 1995 survey by the NMDG&F as using the southern portion of the Planning Area (Williams 1995).

Listed and federal candidate species that potentially occur within the Planning Area but have not been specifically identified include the black-footed ferret, Arctic peregrine falcon, Southwestern willow flycatcher, Mexican spotted owl, Zuni fleabane and puzzle sunflower. The black-footed ferret is considered to be extirpated from New Mexico (NMDG&F 1996), so it is not likely to be found within the Planning Area. The Arctic subspecies of the peregrine falcon would migrate through the area only during the spring and fall. Because suitable riparian and old-growth forest habitats are lacking, neither the Southwestern willow flycatcher nor the Mexican spotted owl are likely to be found within the Planning Area. Both the Zuni fleabane and the puzzle sunflower have been identified as occupying habitats only outside the Planning Area.

Species of concern that are known to occur within the Planning Area include the Western burrowing owl, loggerhead shrike, ferruginous hawk, cinder cone scorpionweed (*phacelia*), Acoma fleabane and grama grass cactus. All these species occur throughout the Planning Area wherever their particular habitat sites are found (e.g., prairie dog towns, open piñon-juniper savanna, cinder cones). No specific surveys have been conducted for these species, but they all have been randomly observed.

Vegetative/Habitat Communities

The following discussion is only an example of the general vegetative/habitat communities of the Planning Area, and the potential listed, candidate and BLM sensitive species (species of concern) that could occupy them. Many of the more mobile species (i.e., birds and bats) can use several different communities throughout the year.

Grass-Shrub Community

The threatened or endangered species in the grass-shrub community include the bald eagle, American peregrine falcon, and Arctic peregrine falcon. Other candidates and species of concern include the mountain plover, Western burrowing owl, ferruginous hawk, loggerhead shrike, Cebolleta southern pocket gopher, Texas horned lizard and grama grass cactus.

Piñon-Juniper Community

None of the threatened, endangered or other special-status species appear to be limited to or especially dependent upon the piñon-juniper vegetative community. However, Acoma fleabane is commonly found within this habitat, and many species of bats are known to use woodlands edges in association with special-feature (e.g., riparian) habitats for feeding.

Ponderosa Pine Community

This community is limited within the Planning Area. However, some listed species and species of concern that have the potential to occur in this habitat include the Northern goshawk and Mexican spotted owl.

Special-Feature Habitats

Several species are able to survive only in areas with specific habitat features (e.g., caves, cinder cones, riparian-wetlands) and are not found except where the features exist. These species include bats (occult little brown, spotted, big free-tailed, Yuma Myotis, fringed Myotis, long-legged, long-eared, and small-footed) and cinder cone scorpionweed (*phacelia*).

Riparian-wetland habitats are limited in numbers and size within the Planning Area, but are scattered throughout all of the vegetative communities. The species that use this habitat include the bald eagle, Southwestern willow flycatcher, American peregrine falcon, Arctic peregrine falcon and puzzle sunflower.

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VEGETATION

As described in Chapter 2, the BLM's goal for the Planning Area is to manage the existing vegetation to allow the Potential Natural Communities (PNCs) to be maintained or reestablished. According to data for Cibola County published by the Natural Resources Conservation Service, the environment in the Planning Area is capable of supporting four different PNCs, Grass-Shrub, Piñon-Juniper, Ponderosa Pine, and Lava Complex (NRCS; formerly the Soil Conservation Service, SCS, 1993). These PNCs were determined based on soils, other physical features and climate. They are the ideal vegetative communities that would become established if natural processes were allowed to be completed (refer to Appendix K for further detail). (Note: Three of the communities contain a mixture of vegetation, but are named for the predominant plant species. In contrast, the Lava Complex consists primarily of various types of rock and is named accordingly; it supports some vegetation where the flows are older and soils have formed.)

Each community usually occurs on a distinct area of the landscape. The range or limit of occurrence for each community will vary depending on soils, climate, topography, aspect, slope, elevation and use of an area. Within each community, vegetation from other communities will naturally occur in some varying but relatively small amounts. Communities compete with each other for space, sunlight, moisture and nutrients, and are therefore changing over time. Climate changes and human uses alter the mix of species, as well as their size and location. Human use has significantly contributed to shifts in the vegetative communities found in the Planning Area.

To allow comparison with the PNCs, the BLM has determined what vegetative classes now exist in the Planning Area. The agency acquired satellite remote sensing data gathered in 1994. Using Geographic Information Systems (GIS) computer capabilities, data on the area's existing soils, vegetation, landform and drainage patterns were compared and grouped to map distinct and unique areas referred to as Biophysical Land Units (BLUs). Four vegetative classes, Grass-Shrub, Piñon-Juniper, Ponderosa Pine, and Lava Complex were derived from the BLU data (refer to Appendix N for more information).

The BLM also used GIS to compare the NRCS potential communities with the existing BLU vegetative classes. The results of the comparison are shown in Table 3-11. The table displays the number of acres of existing vegetative classes found within the PNCs. From these comparisons, areas of concern or interest can be identified for further evaluation. For example, the area determined to have a Grass-Shrub PNC contains a higher acreage of piñon-juniper than expected, and the area with a Ponderosa Pine PNC is instead dominated by piñon-juniper. These differences are believed to be the result of past tree harvesting, grazing practices and fire suppression, added to periodic droughts.

These GIS comparisons provide a picture of the current mix of vegetation within each PNC. Consistent with PNC community goals, specific objectives for various vegetative species are discussed in the vegetation section of Chapter 2.

Rangeland Resources

Sixteen livestock grazing allotments overlap the Planning Area (refer to Map 4). The BLM has placed each allotment into a "Selective Management Category," based on its existing vegetative (ecological) condition and/or conflicts with other resource uses (e.g., wildlife, watershed). Categorization provides a system for focusing attention on the allotments in which changes in grazing management may be needed. The criteria for grazing allotment categorization are displayed in Table 3-12, with the specific category for each allotment found in Table 3-13.

The "I" category allotments are managed to improve their ecological condition and resolve resource conflicts. These are the allotments on which the BLM can apply vegetative management techniques, where the NRCS data indicate the potential is good for change. The "M" category allotments are managed to maintain current satisfactory resource conditions. The "C" category allotments typically contain small amounts of unconsolidated public lands, have no resource conflicts, and/or have a low potential for improved resource condition. These allotments are managed custodially (i.e., with grazing fees collected, but without large investments of time or money).

TABLE 3-11

POTENTIAL NATURAL COMMUNITIES COMPARED WITH EXISTING VEGETATION IN THE EL MALPAIS NCA (rounded to nearest hundred acres)

Potential Natural Communities [a]	Totals	Existing Vegetative Classes [b]			
		Grass-Shrub	Piñon-Juniper	Ponderosa Pine	Lava Complex
Grass-Shrub	101,300	81,900	18,400	900	100
Piñon-Juniper	97,000	15,500	61,700	16,000	3,800
Ponderosa Pine	49,800	8,200	27,200	13,400	1,000
Lava Complex	14,000	500	1,200	3,900	8,400
Totals	262,100	106,100	108,500	34,200	13,300

Notes: [a] Based on data from the Natural Resources Conservation Service (USDA, SCS 1993).
[b] Based on BLM satellite remote sensing data (1994) and Geographic Information Systems analysis.

Monitoring studies are done on all allotments, with the intensity and frequency based on allotment category. "C" allotments are field checked upon permit/lease renewal. For the "M" allotments, vegetative trend data is collected and reviewed before permit renewal. Trend and forage utilization studies are done and evaluated every 5 years on the "I" allotments. If evaluations indicate, changes in livestock grazing management are implemented. Categories are changed based on new resource information.

In the Planning Area, monitoring studies have been done on the "I" category allotments, followed by a review of grazing preference. These studies and reviews are part of the agency's ongoing rangeland management effort. For example, in 1992 the BLM issued decisions to establish new grazing preferences, which included sufficient forage to provide for wildlife needs. Table L-1 in Appendix L displays the grazing preferences before and after the monitoring studies and new decisions. In addition to these adjustments, other changes in grazing management have been implemented (refer to Table L-2).

On-the-ground monitoring studies will continue to be done. To enhance these monitoring methods and increase the success of vegetative management practices, the BLM will also continue to use satellite data and GIS computer capabilities. Based on the comparison and evaluation of these two types of data, the agency will continue to make adjustments in grazing use (including reduced livestock numbers). Vegetative treatments will be applied in specific areas where they are likely to succeed to encourage the formation of PNCs. As resource conditions change, the selective management categories can also be changed.

Areas Unusable for Livestock Grazing

Because of their slope and rockiness, many acres in the Planning Area are not usable by cattle for grazing. As a result of vegetative inventory, these acres have remained unallocated for grazing. Table 3-14 displays the unusable acres and AUMs.

Livestock Grazing in Planning Area Wilderness

P.L. 100-225 provides that livestock grazing may continue in the NCA, including in the West Malpais and Cebolla Wildernesses. The Department

TABLE 3-12

ALLOTMENT CATEGORIZATION CRITERIA

Category M (Maintain)	**Category I (Improve)** *	**Category C (Custodial)**
An allotment must meet conditions 1, 2 & 3 or 1, 2, & 4 (listed below).	An allotment must meet any one of the following three conditions.	An allotment must meet all of the following conditions.
1. Has no significant resource conflicts, and current grazing management practices are acceptable.	1. Has a potentially significant resource conflict, and current grazing management practices could be improved.	1. Has no significant resource conflicts, and grazing management practices are acceptable.
2. Has only a moderate potential for improvement in forage production (vegetative condition).	2. Has a high potential for improvement in forage production (vegetative condition), and an ecological condition rating of 50 or less.	2. Has a low potential for improvement in forage production (poor soils).
3. Has an ecological condition rating of 38 to 51 and an improving vegetative trend.	3. Has an ecological condition rating of 50 or less and a static or downward vegetative trend.	
4. Has an ecological condition of 51 or higher and a static or improving vegetative trend.		
Other Considerations Contains 30% or more public land or more than 1,540 public land acres.	Other Considerations Contains 30% or more public land or more than 1,540 public land acres.	Other Considerations Contains less than 30% public land or less than 1,540 public land acres.

Note: * Regardless of its size, any parcel of public land with an identified resource conflict qualifies for this category.

of the Interior's Wilderness Management Policy allows motorized and mechanized equipment to be used to maintain range improvements in wilderness when it is considered to be the minimum tool needed.

To provide guidance and procedures for this type of maintenance, the BLM in 1990 developed Range Improvement Maintenance (RIM) Plans. As stated in the plans, allottees may use motorized vehicles on preapproved routes to access improvements when the weather and ground are dry. In general (except in emergencies), the maintenance schedule is as follows: windmills annually (minimum), fences every 5 years, and dirt tanks every 10 years.

Livestock Grazing in the National Monument

In establishing the El Malpais National Monument, the Congress transferred to the National Park Service over 100,000 acres of public land formerly administered by the BLM as multiple use lands. P.L. 100-225 provided that livestock grazing in the monument could continue until December 31, 1997, under BLM administration. Now that such use has been discontinued in the monument, the BLM has adjusted all affected grazing permits to reduce livestock numbers. Appendix M shows the allotments on which this grazing has been discontinued.

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TABLE 3-13

SELECTIVE MANAGEMENT CATEGORIES FOR GRAZING ALLOTMENTS OVERLAPPING THE PLANNING AREA

Allot-ment Number	Allotment Name	Selective Management Category	Public Land Acres
201	Cerritos de Jaspe	M	9,138
202	Bright's Well	M	304
203	El Malpais	I	136,195
204	Raney	C	1,980
205	Los Pilares	I	13,998
206	Little Hole-in-the-Wall	C	320
207	Cerro Brillante	I	21,760
208	Loma Montosa	I [a]	7,520
209	Techado Mesa	I	35,099
210	Los Cerros [b]	I	40,109
211	Ventana Ridge	M [a]	3,013
222	Chical	C [c]	1,600
226	Arrosa	C	640
438	Monument Lake	C	3,200
439	La Vega	C	160
457	Palomas	C [c]	640
		Total	275,516 [a]

Notes: [a] Includes allotment acres that are outside the Planning Area.

[b] Combined allotment created in 1995 to include the former Cerro Chato (#200).

[c] Allotments created by the BLM as the result of a land exchange with the State of New Mexico in 1987.

TABLE 3-14

ACRES AND AUMS IN THE PLANNING AREA UNUSABLE FOR LIVESTOCK GRAZING

Allotment Number	Allotment Name	Unusable Acres	Unusable AUMs
201	Cerritos de Jaspe	10,235	1,821
203	El Malpais	45,429	2,949
204	Raney	7,912	-- [a]
205	Los Pilares	3,003	287
207	Cerro Brillante	346	15
208	Loma Montosa	7,476	284
209	Techado Mesa	9,335	958
210	Los Cerros [b]	11,431	492
211	Ventana Ridge	1,484	193
	Totals	96,651	6,999

Notes: [a] AUMs not calculated.
[b] Includes information for the former Cerro Chato Allotment (#200).

Riparian/Wetland Habitats

These habitats are areas of land directly influenced by permanent water, such as spring areas or streambanks. They have visible vegetation or physical characteristics that reflect this influence. Excluded from this definition are ephemeral (temporary) streams or washes that do not have vegetation that depends on free water in the soil.

Riparian areas are extremely limited in size and extent throughout the Planning Area. As such they are unique and extremely important, not only for many species of wildlife that are dependent on them, but also for maintenance of water quality, spring and streamflow, and forage production.

A few small riparian/wetland marshy areas occur around natural springs in the Planning Area. Cebollita and Cebolla are the best known springs; each provides enough water to form a small (less than 10-acre) riparian/wetland area with a small (less than 1½-mile-long) intermittent stream below it. In addition playa lakes, which are ephemeral (temporary) and dependent on annual precipitation, can resemble wetlands after large summer rainstorms.

Except for the small streams below Cebollita and Cebolla Springs, no perennial streams exist within the Planning Area. Runoff occurs only from high-intensity summer storms and occasional snowmelt. The majority of the area is a closed basin with no external water sources.

FIRE MANAGEMENT

Fire has played an integral role in the development of the Planning Area, which is made up of numerous plant communities that have developed as part of a fire-dependent ecosystem. Periodic burning of these plant communities allows their natural composition, structure and function to continue.

Historically, natural fires have occurred every 2 to 3 years or less within these ecosystems, burning an average of 500 to 2,000 acres per occurrence. In combination with other factors, recent, aggressive

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fire suppression has significantly changed the plant communities from more open grasslands to shrub-grasslands and piñon-juniper woodlands. These shrub and woodland communities do not produce the fine fuels necessary to carry natural fires, so the natural cycle of vegetative change has been suppressed. This shift has also resulted in increased fuel loads, soil erosion, and a loss of ecosystem and biological diversity.

The BLM has an ongoing program of using prescribed fires throughout the lands managed by the Albuquerque Field Office, including the Planning Area. This prescribed fire program is used to enhance vegetative habitats for both wildlife and domestic livestock. It is also being used to help blend fire back into the natural process of a functioning ecosystem.

The agency prepares individual burn plans before using prescribed fires or wildland fires (under prescription) to improve the vegetative habitats of the Planning Area. (Otherwise, BLM policy requires that all wildfires be fully suppressed.) A state burn permit, including a smoke management plan, is also required to conduct prescribed fires in the New Mexico.

After this Plan Amendment/EIS is approved, the BLM will prepare a Fire Management Plan for the Planning Area to identify how fire will be used to protect, maintain and enhance resources and meet vegetative objectives. The fire plan will incorporate the management restrictions identified in this Plan Amendment/EIS that could stop unacceptable resource damage (e.g., no bulldozers in riparian areas).

LANDS & REALTY (INCLUDING BOUNDARY ADJUSTMENTS)

Land Ownership

The NCA makes up the majority of the Planning Area. In addition to the NCA land, the Planning Area includes lands acquired by the BLM since 1987 that are adjacent to the NCA, and lands needed to develop the CDNST. Acreages within the NCA and Planning Area are shown in Table 3-15.

P.L. 100-225 authorizes the acquisition of private lands and minerals within the NCA. The Congress intended that when the BLM seeks to acquire this private land, the consent of the property owner should be obtained. This consent requirement applies unless an imminent threat exists that the land is to be developed in a manner contrary to the purposes for which the NCA was established.

A combination of land protection methods is used to protect NCA resources on private land. As authorized by Sections 502 through 506 of P.L. 100-225, the BLM can acquire land or interests in land (i.e., mineral estate and conservation or scenic easements) by donation, purchase with donated or appropriated funds, exchange, and transfer from any other federal agency. Cooperative agreements can also be used to protect privately owned resources. As historical properties become available in the NCA, they are being evaluated for their historical, architectural, cultural and interpretive value.

Since 1987, the BLM has acquired about 193,700 acres of mineral rights in the NCA and the National Monument, 13,400 surface acres within the NCA, and 14,000 acres contiguous to the NCA. The National Park Service (NPS) has acquired approximately 7,000 acres within the National Monument. Acoma Pueblo has acquired approximately 320 acres within the NCA Neck Unit and 6,560 acres adjacent to the NCA.

Acquisition Priorities

The priorities and rationale for BLM acquisition of properties within the boundary of the NCA, as defined in the Land Protection Plan (USDI, BLM 1989b), are summarized below.

The first priority for acquisition, preferably by exchange, is all private subsurface interests within the NCA. Mineral development anywhere within the boundaries of the NCA is incompatible with the Congressionally mandated goals and purposes of the NCA. Federal minerals have been withdrawn, and acquisition of private minerals would provide the same protection to the non-federal parcels. The BLM has completed mineral exchanges and fee acquisitions with the principal subsurface landowners, the

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TABLE 3-15

LAND OWNERSHIP WITHIN THE NCA AND PLANNING AREA [a]

	NCA		Planning Area	
Ownership	**Acres**	**Percent**	**Acres**	**Percent**
BLM	226,000	86.2	248,000	86.6
Private	34,300	13.2	36,500	12.8
Indian	1,800	.6	1,800	.6
Totals	262,100	100	286,300	100

Note: [a] As of January 1997.

New Mexico and Arizona Land Company, the Cerrillos Land Company, and the State of New Mexico. About 39,600 acres of private minerals remain within the NCA, but clear title information has been difficult to obtain for these inholdings. The remaining subsurface inholdings are located primarily in the Cebolla Wilderness, Neck, Brazo and Breaks Units.

The second priority for acquisition, preferably by exchange, includes all private inholdings and edgeholdings within and adjacent to the Cebolla Wilderness and West Malpais Wilderness. The Chain of Craters WSA contains no private surface, so no acquisition is needed.

Increased use on private lands within wilderness is incompatible with the goals and purposes for which the Congress designated them. Acquisition of private inholdings prevents any change in land use and improves the area's manageability, while acquisition of edgeholdings provides access.

Acquisition of the remainder of Cebolla Spring in T. 5 N., R. 10 W., Section 12 and associated riparian area in the Brazo Unit would ensure protection of a critical riparian area. The "Old Hughes Place," a historical homestead in the Brazo Unit, may merit preservation and is included in this priority. The BLM recently acquired all but four private edgeholdings and three inholdings in the Cebolla Wilderness, including a portion of Cebolla Spring and the private portion of the Pinole Site, and all but three inholdings in the West Malpais Wilderness. Two of the West Malpais inholdings (Sections 22 and 26, T. 7 N., R. 12 W.) are subdivided into 40-acre parcels, some of which have been sold to different landowners. The BLM is working to acquire both of these sections.

The third priority is acquisition of scenic and/or conservation easements along the federal, state, and county highways passing through the NCA. Commercial development and visual intrusions along the roadways (e.g., billboards) are incompatible with the goals and purposes of the NCA. Protection of the viewshed along NM 117 in the Neck Unit, the scenic gateway to the NCA, is most important. Also to be protected are the viewsheds along I-40 and NM 53 in the Neck Unit, and along portions of CR 42 in the Continental Divide Unit.

The fourth priority is the Acoma Exchange, _if_ initiated by the Pueblo of Acoma. This exchange is mandated by P.L. 100-225 if requested by the pueblo, but to date, the Acomas have chosen not to pursue this option.

The fifth priority for acquisition is lands containing natural and/or cultural resources that require management or protection, and/or lands needed for visitor access and facility development. Where private uses are incompatible with NCA goals and purposes, or where important resources are on private land, acquisition may be the only feasible means of

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protection. However, other options such as cooperative agreements and easements may be explored. Exchange is the preferred method of acquisition.

All private inholdings in the Brazo and Breaks Units should be acquired. The remaining portion of the Cebolla Spring riparian area and the Old Hughes Place are included above under Priority 2.

In the Cerritos de Jaspe Unit, important prehistorical cultural resources are threatened by uncontrolled excavation. The BLM would acquire these lands under Priority 5 if they were offered for sale or exchange by their owners.

Under this priority, the BLM would also acquire some private surface inholdings in the Continental Divide Unit from willing sellers. However, this does not include land in the heavily subdivided areas of the unit.

The sixth priority is protection of private land and resources within the NCA to benefit resources within the National Monument. Any development visible from CR 42 in the Continental Divide Unit would intrude on the natural scenic quality of the monument. Acquisition of scenic or conservation easements along CR 42 would protect the monument's viewshed.

An increase in the number of access roads into the subdivided areas within and west of the Continental Divide Unit of the NCA would also intrude on the natural scenic quality of the monument. The BLM and the NPS will work with Cibola County and local landowners to limit the number of access roads across the monument and the NCA, while still providing access from outside these protected areas.

The seventh priority is land on which no immediate threat to natural or cultural resources exists. As land becomes available in these other areas, they will be evaluated for their suitability for acquisition. Only exchange and sale proposals from private landowners that are in the best interest of the federal government and that meet the goals and purposes of the NCA will be pursued.

Potential NCA Boundary Adjustment Areas

The Acoma Tribe has requested that the boundary of the NCA be modified to exclude 800 acres owned by the pueblo before the NCA was established. This acreage is west of NM 117, between the highway and the monument boundary. The Congress' original intent was to encourage the tribe to exchange this land, then to include the 800 acres within the monument boundary. However, the Acomas have chosen to retain the land because it is part of their aboriginal claim area and has recurring value to them.

The Planning Area includes two parcels of public and private land that could be recommended for inclusion within the NCA adjacent to the Breaks and Brazo Units. An additional four parcels of public and private land located outside the Planning Area boundary could also be recommended for inclusion within the NCA (Continental Divide-AFO, Cerro Brillante-AFO, Techado Mesa-SFO, and Tank Canyon SFO). Table 3-16 summarizes the land ownership status within these proposed expansion areas, and Map 3 in Chapter 1 shows their boundaries.

Five of these parcels would add contiguous, predominantly public land containing key cultural and natural values. They are a logical extension of the NCA, and would enhance the manageability of the area. The sixth parcel would secure a treadway for the proposed CDNST route. A description of these six parcels follows. (Note: Any adjustment in the boundary of the NCA would require that the Congress amend P.L. 100-225.)

The first parcel, the Breaks Non-NCA Unit, includes 11,630 acres of formerly private land (acquired as part of the King Exchange), with 500 acres of private land remaining. This area is characterized by open grasslands with blue grama in sod-bound form, and shrubs such as fringed sage predominant. Part of this area is classified as having the sparse to bare vegetation type, which is extremely sensitive to climatic variation and surface disturbance. Historically and at present, these lands have been used for grazing.

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Cultural resources on this parcel are extremely important. It contains a major portion of the prehistorical community associated with the Dittert Chacoan Archeological Protection Site (P. L. 96-550, as amended). In addition, a brief reconnaissance survey of a single section in the southern portion of this parcel yielded evidence of 12 masonry pueblos, suggesting the area contains one of the highest densities of pueblo sites in the region. These ruins are an extension of a prehistorical community that lies partially within the NCA to the north. As part of the NCA, this land would also provide a staging area for wilderness-based recreation activities, serve as a buffer between the Cebolla Wilderness and adjacent private land, and provide access into the Dittert Site and Homestead Canyon.

The second parcel, the Brazo Non-NCA Unit, contains about 10,400 acres of recently acquired private land, with 1,690 acres of private land remaining. This land has the same resources and values as the adjacent Brazo Unit of the NCA and can be most easily managed as a part of the NCA. Primary uses are grazing, hunting, piñon-nut picking, and access to the Cebolla Wilderness and other parts of the NCA.

The third parcel, the Cerro Brillante-AFO Unit, contains 3 to 4 miles of treadway for the CDNST. All of this parcel (2,030 acres) is privately owned land. Acquisition of either an easement or the land is required before the BLM could construct this segment of the trail or encourage its use.

The fourth parcel, the Continental Divide-AFO Unit, contains 1,960 acres of federal land but no private land. This land has the same resources and values as the adjacent Continental Divide Unit of the NCA and could be most easily managed as part of the NCA.

The fifth parcel, the Techado Mesa-SFO Unit, includes approximately 5,000 acres of public land managed by the BLM Socorro Field Office and 40 acres of private land that adjoin the Brazo Non-NCA Unit identified above. This scenic area contains rolling topography and a high, steep- sided mesa capped by lava flows. Vegetation is dominated by a ponderosa pine-oak mixed forest and piñon-juniper woodlands. Small playa lakes form seasonally on the mesa top. Visually and ecologically, the area is similar to the Brazo Unit of the NCA. Primary uses are

TABLE 3-16

LAND OWNERSHIP OF PROPOSED NCA BOUNDARY ADJUSTMENT AREAS [a]

(acres)

Unit	BLM	Private	Total
Brazo Non-NCA	10,400	1,690	12,100
Breaks Non-NCA	11,630	500	12,130
Cerro Brillante-AFO [b]	0	2,030	2,030
Continental Divide-AFO	1,960	0	1,960
Tank Canyon-SFO	9,870	200	10,070
Techado Mesa-SFO	5,000	40	5,040
Totals	38,860	4,460	43,330

Notes: [a] As of January 1997.

[b] The BLM would seek to acquire an easement for the Continental Divide National Scenic Trail across this land.

grazing, watershed, wildlife, hunting, piñon-nut picking and scenic enjoyment.

Within this parcel are seven sections (4,350 acres federal and 40 acres private) in northeast Catron County and one section (640 acres federal) in northwest Socorro County managed by the BLM Socorro Field Office. The *Socorro Resource Management Plan* (USDI, BLM 1989d) classified these lands for retention "as needed in support of the El Malpais General Management Plan." The Techado Mesa parcel, if managed as part of the NCA, would enhance opportunities for semi-primitive motorized recreation and augment both wildlife and watershed management. It would also improve management by the BLM because Albuquerque Field Office personnel are frequently in the area because of its proximity to the NCA, whereas it is far removed from the BLM Socorro Field Office. The BLM Albuquerque Field Office already manages grazing allotments on this parcel under a cooperative agreement with the Socorro office.

The sixth parcel, the Tank Canyon-SFO Unit contains 9,870 acres of federal land and 200 acres of private land. It lies southwest of the Cebolla Wilderness and adjoins the recently acquired Breaks Non-NCA parcel described above. The Tank Canyon parcel is in Catron County and the federal lands are currently managed by the BLM Socorro Field Office. This parcel is slated for disposal in the Socorro RMP because the lands are isolated from other BLM-administered land.

The Tank Canyon parcel includes high densities of archeological sites that warrant intensive management. Among these is the Newton Site, a large, late masonry pueblo that is among the most important cultural resources in the region. The Tank Canyon area also includes well-preserved historical homesteads that were once part of a large, loose-knit community in the El Malpais region.

Most of the headwaters of Tank Canyon are contained in a scenic area of rolling topography. Vegetation is dominated by piñon-juniper woodlands, while wildlife values are similar to those in the Cebolla Wilderness.

Addition of the Tank Canyon area to the NCA would facilitate management of cultural resources, wildlife and watershed. It would also contribute more opportunities for semi-primitive, non-motorized recreation in the NCA.

Rights-of-Way & Land Use Permits

Within the Planning Area are portions of five state or county roads, NM 117, NM 53, CR 41, CR 42 and CR 103. Numerous unpaved roads and routes are used by the general public, grazing allottees, and private landowners. The BLM has issued several rights-of-way within the Planning Area for roads, telephone and powerlines. Along I-40, adjacent to the Planning Area for approximately 5 miles, is a major right-of-way/utility corridor identified in the Rio Puerco RMP. No designated utility corridors exist within the NCA or Planning Area.

Although no temporary land use permits are currently authorized within the Planning Area, they could be in the future as long as they did not conflict with the goals for which the NCA was established. An example is a permit for commercial filming.

MINERALS & PALEONTOLOGY

Minerals

P.L. 100-225 withdrew public lands in the NCA from the mining, mineral leasing and geothermal leasing laws, subject to existing rights. No grandfathered mining claims, mineral or geothermal leases exist in the NCA. The law authorizes the BLM to acquire the mineral interests for public lands in the NCA and the National Monument. It also specifies that as private lands are acquired within the NCA, the mineral rights are also acquired, and these lands are automatically withdrawn from mineral entry. Since establishment of the NCA, the BLM has acquired 62,221 acres of mineral rights there. Approximately 40,000 acres of privately owned minerals remain in the NCA. Additional Planning Area lands have been acquired outside the NCA boundary; these are presently open to mineral development.

Paleontology

Although the Planning Area has not been surveyed for paleontological resources, reports of vertebrate fossils in the northernmost section have been

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confirmed. In addition to the Jurassic Age Morrison Formation, potential for paleontological resources exists in certain other geologic formations within the Planning Area. Formations such as the Todilto, Dakota, Mancos Shale, and Crevasse Canyon are known elsewhere to contain fossils ranging from fish to dinosaurs, certain marine invertebrates and plants. In other parts of the Planning Area, features and fissures within the older lava flows as well as certain sedimentary rocks may contain animal and plant material that have accumulated over thousands of years. This zoological and paleontological material could provide information about the area's past climatic conditions, plants and animals.

SOCIAL & ECONOMIC CONDITIONS

For purposes of economic and social analysis, the primary influence of the Planning Area is within Cibola County, which is the focus of this section. (Use of the Planning Area's resources and facilities, however, has broader influences. People from Albuquerque pursue outdoor recreation and hobby interests there, and tourists from many parts of the U.S. as well as foreign countries visit La Ventana Arch and other natural resources.)

Cibola County was created by a division of Valencia County in 1981, so data for the new county before 1981 are estimated. In 1970, the county's population was 20,125, rising to 30,109 in 1980 and falling to 23,794 in 1990. These population changes were mainly related to uranium mining activity in the area.

The multiethnic nature of the population creates diversity in the community and its values. The figures in Table 3-17 show the ethnic distribution of the population.

Employment and income figures for the county are shown in Tables 3-18 and 3-19. While figures for total employment showed an increase between 1985 and 1994, little change occurred in the portion of private-industry employment as compared to government employment. Farm employment numbers (expressed as a percentage of the area's total jobs) decreased slightly, while private industry showed a reduction in mining jobs and increases in retail trade

TABLE 3-17

CIBOLA COUNTY POPULATION BY RACE AND PARTIAL ETHNIC ORIGIN, 1980 & 1990

	1980		1990	
Population Category	**Number**	**Percent**	**Number**	**Percent**
Female	15,184	49.94	12,140	51.02
Male	15,218	50.06	11,654	48.98
Total	30,402	100	23,794	100
Race/Ethnic Origin American Indian, Eskimo, Aleut	7,852	25.83	9,155	38.48
Asian or Pacific Islander	64	.21	81	.34
Black	165	.54	191	.8
Other Race	3,847	12.65	468	1.97
White	18,474	60.77	13,899	58.41
Hispanic Origin	11,249	37	8,109	34.08
Non-Hispanic White	7,212	23.72	6,491	27.28

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TABLE 3-18

CIBOLA COUNTY EMPLOYMENT BY INDUSTRY, 1985 & 1994

	1985		1994	
Industry	**No. of Jobs**	**Percent of Total Jobs**	**No. of Jobs**	**Percent of Total Jobs**
Farm	254	4.86	282	3.88
Non-Farm [a]	4,971	95.14	6,978	96.12
Private (Total)	3,471	66.43	4,878	67.19
Agricultural Services, Forestry, Fisheries & Other	37	0.71	48	0.66
Mining	241	4.61	320	4.41
Construction	193	3.69	283	3.9
Manufacturing	233	4.46	388	5.34
Transportation & Public Utilities	329	6.3	317	4.37
Wholesale Trade	103	1.97	190	2.62
Retail Trade	1,070	20.48	1,525	21.01
Finance, Insurance & Real Estate	303	5.8	352	4.85
Services	962	18.41	1,455	20.04
Government & Government Enterprises (Total)	1,500	28.71	2,100	28.93
Federal--Civilian	176	3.37	438	6.03
Federal--Military	124	2.37	105	1.45
State & Local	1,200	22.97	1,557	21.45
Totals [b]	5,225	100	7,260	100

Notes: [a] Sum of the Private (Total) and Government/Government Enterprises (Total) categories.
[b] Sum of the Farm, Private (Total) and Government/Government Enterprises (Total) categories.

and services. (These latter two sectors include jobs in the recreation and tourism industries.) The 1994 Cibola County civilian labor force was reported at 9,658, of which 8,766 were employed and 892 were unemployed, for an unemployment rate of 9.2 percent. (New Mexico's overall unemployment rate is 6.3 percent.)

Total personal income in the county increased by approximately 50 percent between 1985 and 1994. Per-capita income increased from $6,856 in 1985 to $10,793 in 1994. Earnings from mining (as a percentage of personal income) increased slightly, and were also higher in retail trade and services. During the period, earnings from government employment increased by 115 percent.

Cibola County residents are interested in the creation of a higher standard of living through the development of jobs and income. American Indian use of the Planning Area's resources for traditional cultural purposes is another important social factor. The rural setting and ranching lifestyle are also highly valued by a portion of the population.

SOIL, WATER & AIR RESOURCES

Soils

The Planning Area is within the Cibola County Soil Survey area (USDA, SCS 1993). Most of the soils in the area are moderate to fine textured. Soils on the older basalt flows and steep mesa sideslopes are very stony or cobbly. Rock outcrops, including those with minor amounts of soil, form large portions of the landscape along the mesa fronts and basalt flows. Except on the steep mesa slopes, most soils in the Planning Area have a low to moderate runoff and erosion potential.

Gully erosion in valley bottoms such as Cebolla and Sand Canyons follows the historical pattern found throughout the west, where a changing climate and expanding settlement helped to initiate another arroyo cut-and-fill cycle. (In these cycles, arroyos develop and then fill back in over several hundred years.) Surface runoff and sediment flows are contained in small closed basins against the lava fields.

Water

Several areas within the Planning Area have small springs. Cebollita and Cebolla Springs provide enough water to create small riparian/wetland areas. These springs are used by livestock and wildlife.

No perennial streams exist in the Planning Area, except for the 1 to 1½ miles of flow below Cebolla and Cebollita Springs. Overland flow only occurs as runoff from high-intensity summer storms and occasional snowmelt. For the most part, the Planning Area is a closed basin, with precipitation remaining in the area until it soaks into the ground or evaporates.

The San Andres-Glorieta Formation is the major subsurface source of water. Aquifer yield is extremely variable. Depth to groundwater ranges from 200 feet or less in the valleys and plains to more than 500 feet in other areas. Areas in which igneous rocks predominate do not transmit significant amounts of water and are not considered to be aquifers.

The quality of groundwater in the region is usually good enough for livestock and domestic use. Additional water sources for livestock include stock tanks and windmills. Most windmills are drawing from shallow alluvial aquifers that provide enough water to meet livestock demands.

The Ranger Station is the only site in the Planning Area with a public water supply, which is tested according to New Mexico Water Quality Control Commission regulations. The right to use water is established by state and federal laws. The BLM is a participant in a water rights adjudication that includes most of the Planning Area.

Air

The Planning Area is designated a Class II airshed under the 1977 Clean Air Act (refer to the Glossary). This airshed meets all New Mexico and federal air quality standards.

The open landscape in the Planning Area makes alteration of its airshed very apparent. Wildfires are the most common source of air-quality deterioration.

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The lava flows of El Malpais have the highest occurrence of lightning- started fires in the region. Fires are usually less than 100 acres in size, and their smoke briefly impacts air quality.

VISUAL RESOURCE MANAGEMENT

The landscape composition of the Planning Area is quite diverse. The area has a wide variety of landforms; the steepness of slopes varies radically and frequently within short distances. The Planning Area includes interesting and distinctive geologic features that vary from volcanic plugs and cinder cones to cliffs and mesas formed of sandstone, to wide valleys and low, broken and rolling hills. Vegetation in the Planning Area is as variable, ranging from grass, shrubs and piñon-juniper woodlands to ponderosa parklands and deciduous groves of oak and aspen. Natural features such as the dramatic La Ventana Natural Arch, the colorful sandstone bluffs, cinder cones and lava flows are dominant features in the landscape. The contrasts in the basic elements of form, color, and texture in these landform and vegetation features provide a pleasing visual variety that contributes to the area's high-quality scenic value.

Views in the Planning Area are of broad panoramas of open forests, volcanic fields, the sandstone bluffs rising above the flows on the eastern side, and cinder cones on the western side. Past management activities and human uses of the area have not created dominant modifications to the landscape. Visitors have views from the cinder cones and bluffs overlooking the Planning Area, as well as from paved roads NM 117 and NM 53. Other portions of the Planning Area can be seen from county and local roads that provide access. When marked, a segment of the CDNST will also cross the Planning Area.

Table 3-20 displays the amount of public land acreage in the Planning Area in each Visual Resource Management (VRM) Class. The VRM class for the two wildernesses is Class I. The Chain of Craters WSA is being managed under VRM Class II objectives. The remaining lands, except for those acquired within the Planning Area since the completion of the Rio Puerco RMP (1986), lie within VRM Class I, II or III, as shown on Map 14. (Note: Unless these recently acquired lands within the Planning Area fall within the boundary of the NCA, they are not assigned a VRM Class.)

Visual resources on the BLM lands that adjoin the southeast corner of the Planning Area are managed by the Socorro Field Office as VRM Classes III and IV (USDI, BLM 1989c). They will continue to be managed according to the prescriptions for these classes in the Socorro RMP. (Appendix E explains the BLM's VRM system and management objectives for each class.)

TABLE 3-20

VISUAL RESOURCE MANAGEMENT CLASSES IN THE EL MALPAIS PLANNING AREA [a]
(public land acres)

Area	Class I	Class II	Class III	Unassigned	Totals
NCA	125,130	86,760	14,110	0	226,000
Planning Area (outside NCA)	0	0	0	22,000	22,000
Totals	125,130	86,760	14,110	22,000	248,000

Note: [a] No Class IV areas exist in the Planning Area.

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CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter presents the environmental consequences of the management actions proposed under the four alternatives described in Chapter 2. These management actions were developed as alternative ways of resolving the ten issues that pertain to Planning Area management and allocation of public land resources, their use and protection. BLM decisions about resource use and management in the Planning Area will be based on this impact analysis.

The alternatives include Alternative A (No Action), which represents the continuation of existing management practices defined in the *Rio Puerco Resource Management Plan* (RMP), with minimal modifications to meet the requirements of Public Law (P.L.) 100-225; Alternative B, the Resource Use Alternative, which would emphasize direct human actions; Alternative C, the Natural Processes Alternative, which would minimize human activities within the Planning Area; and Alternative D, the Balanced Management or Preferred Alternative, which would protect important environmental values and sensitive resources while allowing the development of recreational facilities and other human uses.

Impacts are discussed by alternative for each specific resource or program. For the analysis, BLM staff have used existing data, current methodologies, professional judgements, and projected actions and levels of use. The analysis takes into account the mitigation measures and stipulations described in Chapter 2. If impacts are not discussed, the analysis has indicated that none would occur, or their magnitude would be negligible. No impacts have been identified for climate, topography, prime and unique farmlands, floodplains, and hazardous materials.

Also analyzed are direct and indirect impacts, short-term uses versus long-term productivity, and irreversible and irretrievable commitments of resources. Cumulative impacts are summarized at the end of each alternative discussion. These impacts would occur as the result of past, present, and reasonably foreseeable future actions by federal, state, and local governments, private individuals and entities in or near the Planning Area.

Impacts from actions to be carried out under more than one alternative are discussed under the first applicable alternative. This discussion then is referenced under the other pertinent alternatives.

The emphasis of this chapter is general resource allocation and environmental analysis at the activity plan level. Site-specific environmental analyses, as required, would be conducted as project proposals were implemented.

GENERAL ASSUMPTIONS

The following are the general assumptions used for impact assessment under all alternatives. Assumptions associated with a single issue (e.g., wildlife habitat) are included within the alternative discussion for that issue.

- Short-term impacts are those that would last for fewer than 5 years.
- Long-term impacts are those that would last for 5 years or more.
- Demand for both dispersed and concentrated recreation in the Planning Area will continue to exist and increase.
- State highways and county roads through the Planning Area will remain open for access.
- Staff and budget will be available to implement the actions.
- No mineral development will occur on acquired lands (no potential is known within the Planning Area).
- The life of this El Malpais Plan is 15 to 20 years.

ALTERNATIVE A--NO ACTION

Recreation & Facilities

Under Alternative A, actions proposed to resolve the issues listed below would have no impacts on recreation or facility development, or the magnitude of the impacts would be negligible. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

Increases in the numbers of visitors may decrease enjoyment for some people. Increased recreational use would create short-term impacts such as crushing of vegetation, localized soil compaction and erosion as people used the same locations over and over again.

In the long term, however, monitoring and the low numbers of developed facilities would help to disperse recreation and improve recreational opportunities. As monitoring showed impacts that exceeded the standards for Limits of Acceptable Change (LAC), the BLM would build hiking and mountain biking trails, trailheads, and other appropriate recreation facilities. This additional development would keep impacts low at existing sites and accommodate more dispersed use as the number of visitors increased.

Maintaining the Chain of Craters Back Country Byway would continue to provide recreational opportunities for visitors interested in driving and sightseeing along back roads. Visitors interested in cultural or historical properties would find up to nine different opportunities for exploration.

Under Alternative A, interpretive evening programs would increase visitor knowledge and recreational opportunities. Guided hikes would increase the opportunities for hiking and sightseeing.

Assigning Visual Resource Management (VRM) classes to all lands in the Planning Area would improve and maintain its scenic quality and increase the opportunities for sightseeing.

Issue 2--Facility Development

The limited facility development in the Planning Area would make some visitors feel unwelcome and uncomfortable about using the area for recreational activities. Others would enjoy the unconfined recreation and solitude. Twenty-two acres (less than 1 percent of the Planning Area) would be disturbed as the result facility development under Alternative A.

Opportunities for camping would be limited to the semi-developed Narrows site. Two developed trailheads would provide recreational opportunities for hikers along the Continental Divide National Scenic Trail (CDNST) and other visitors. The visitor registration boxes installed at the Dittert Site and four selected homesteads would provide the BLM with recreation and visitor use data, enabling more informed decisionmaking about managing the Planning Area.

Issue 3--Access & Transportation

Working with county, state and federal agencies to maintain or improve some roads in the Planning Area would increase two recreational opportunities, driving for pleasure and sightseeing. However, by increasing travel and access along some roads, this action may negatively impact those who wished to experience solitude. To accommodate American Indian traditional activities, temporary closures of small areas would limit access for recreation users during brief periods of time (no more than a few days).

Visitors would have access on 354.5 miles of roads designated as open. This would maintain opportunities for recreationists who were interested in driving for pleasure, back-country driving, or sightseeing. Cross-country access by nonmotorized means would remain as is, providing opportunities for activities such as hiking, mountain biking, and horseback riding.

Issue 5--Wilderness Suitability

Management of existing wilderness and additions would improve recreational opportunities for those wishing to experience solitude. However, those visitors seeking more motor vehicle or mountain bike access to areas for recreation would find diminished opportunities.

Not recommending lands in the Chain of Craters WSA for wilderness designation would open them for more types of recreation. Driving for pleasure, hiking, and mountain biking opportunities would not be limited by a wilderness designation.

Issue 7--Cultural Resources

Surveys for cultural resources would identify sites and increase the potential for recreational opportunities for those visitors interested in cultural or historical properties for sightseeing. If recreational use began to impact cultural resources, such opportunities would have to be modified and/or limited to protect the resources. If cultural resources were found during a survey, recreational developments could be located to avoid impacts.

Five scientific investigations would increase the sightseeing opportunities for those visitors interested in cultural and/or historical properties. Stabilization of historical and cultural properties would mean that more of these sites would be preserved for viewing. Some recreationists would be attracted to sites with antiquities signs, while others would find the signs visually intrusive.

Issue 8--Wildlife Habitat

The quality of hunting and non-consumptive wildlife-related recreation, such as birdwatching, wildlife viewing and photography would improve as wildlife habitat was improved. This improvement would take place through implementation of the Habitat Management Plan and other maintenance and improvement projects designed for wildlife, including threatened, endangered, and special-status species. BLM cooperation with state and federal agencies to reintroduce native wildlife/plant species would also increase wildlife viewing potential.

Northern flicker

If recreational use began to impact or conflict with wildlife habitat maintenance or improvement, such use would have to be modified and/or limited. Habitat management could cause recreational developments to be relocated to avoid affecting wildlife. Some parts of the Planning Area would be seasonally closed to protect wildlife species, limiting viewing opportunities for 2 to 6 months each year.

Issue 9--Vegetation

Continued livestock grazing in the Planning Area could have both beneficial and detrimental effects on recreation. Most vehicle access routes to or across public land would involve ranch roads, and many recreationists such as hikers or hunters would use livestock facilities for orientation when they were in the field. Cattle trails are often good starting points for hikers. Livestock grazing could benefit wildlife-based recreation by dispersing water sources and allowing for increased habitat diversity. Some recreationists would prefer to not have cattle disturb their solitude, viewing cattle as a hindrance to their appreciation of the natural world, while others would enjoy seeing the animals.

Prescribed fires and wildland fires under prescription would create a short-term visual impact and smoke for recreation users, having a negative impact on recreational opportunities. During the burn period, the BLM would limit access to areas covered under the burn plan to protect visitors. This short-term access limitation would negatively affect recreational opportunities. After a burn, recreational use would be monitored closely so visitors did not impact soil stability, and modified if erosion began to occur.

The long-term benefit of the fires would be a more diverse vegetative and wildlife community, which would increase recreational opportunities such as wildlife viewing, hiking, sightseeing and hunting. Some long-term visual impacts would occur if large trees were killed as a result of the fires.

Other vegetative manipulations or actions called for to change the vegetative environment would produce short-term impacts to recreation. During the course of the action, visitor use to the area would be restricted to protect health and safety. Immediately after the treatment some scenic disturbance would be noticeable.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of lands by the BLM would enhance recreational opportunities and management in the Planning Area by reducing potential conflicts between recreationists and private landowners. Public acquisition of non-federal lands would also provide more locations for dispersed recreational use and facility development. Right-of-way management would limit locations where these scenic intrusions could impact recreational opportunities and facilities.

Summary

Recreational activities dependent on a predominantly unmodified natural setting (where motorized use was not allowed unless permitted) could occur in 43 percent of the Planning Area available as designated wilderness. The remaining 57 percent of the Planning Area would support numerous other forms of dispersed recreational activities, including vehicle use, which would be allowed on 354.5 miles of BLM-administered travel routes. Public acquisition of non-federal lands within the Planning Area would also provide more locations for dispersed recreational use.

Recreational developments would be limited to the Ranger Station and the approved Nature Trail, the facilities and trail at La Ventana Natural Arch. The Narrows would provide informal opportunities for picnicking and camping at four semi-developed units, as well as access to the Cebolla Wilderness and the Narrows Rim Trail. Marking this trail and the CDNST would provide additional opportunities for trail hiking and other associated activities. An authorized access route into Hole-in-the-Wall would provide additional hiking opportunities into this rugged area.

Management of the resources in the Planning Area under Alternative A would contribute to maintaining and enhancing the quality of the users' recreational experiences by preventing the degradation of the surrounding physical setting. Improvements in the health of the vegetation and wildlife would increase the recreational opportunities. The quality of consumptive and non-consumptive wildlife-related recreational activities such as wildlife viewing, photography and hunting would be improved through projects proposed to improve habitat and limit vehicle travel within the Planning Area. Up to nine stabilized historical and cultural properties would provide opportunities for those with an interest in viewing them. The use of VRM classes to maintain and improve the scenic quality of the Planning Area would also benefit recreation users.

Public knowledge of the range of recreational opportunities would be provided through interpretive efforts. Programs, guided hikes, brochures, and informal personal contact would be used to provide interpretive messages.

Access & Transportation

Under Alternative A, actions proposed to resolve the issues listed below would have negligible impacts on access and transportation. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Access to public lands to participate in motorized or nonmotorized recreational activities would be controlled through enforcement of regulations; designation of areas as open, closed, or limited to motor vehicle use; and directing certain types of use to specific facilities and routes. Opportunities for developed and dispersed recreational use would continue to be provided at various levels within the Planning Area.

Depending on user preference, the level and type of access and transportation opportunities would have either a positive or negative impact on the recreational experience. Providing travel routes for motorized use would benefit those whose preference was for this means of access. For those whose preference was for more remoteness and the freedom to explore on their own, other areas would be available to enjoy as the result of controlled access. Through the BLM Special Recreation Permit system, commercial outfitter and guide services would continue to provide the

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opportunity for visitors who otherwise would not be able to enjoy the Planning Area's resources.

Motorized recreational vehicle use of the Planning Area would benefit from 354.5 miles of available routes. The density of routes would favor recreationists with a preference for participating in motor-vehicle-dependent recreational activities. Continued use and occasional maintenance of these routes would keep them open. A variety of experiences would be possible due to the conditions of the travel routes. For those who liked the freedom of driving cross-country, the opportunity would be available on 5 percent (or 12,000 acres) of the Planning Area's public lands.

Those who preferred to access the public lands by trail would have limited opportunity, with only five established trails in the Planning Area totalling 36.5 miles in length. Nonmotorized access would be available throughout, except on 100,800 acres of wilderness closed to mechanical forms of transport.

Issue 2--Facility Development

Established trails would benefit users by providing a more comfortable means of reaching public land and by directing them to features of interest. The 25 miles of the CDNST and the short trail at La Ventana Natural Arch (less than a mile long) would continue to provide access opportunities.

The existing facilities (parking lots and trailheads) at La Ventana Natural Arch, the Ranger Station, and The Narrows would continue to provide user access to public lands in the Planning Area. The construction of two primitive trailheads along the CDNST would benefit trail users as convenient points to access that trail or other parts of the western portion of the Planning Area.

Issue 3--Access & Transportation

Motorized vehicles and mechanical forms of transport would be prohibited from using 100,800 acres of public lands designated as wilderness (41 percent of the Planning Area). These lands would be accessible for those who did not depend on these types of transport for use and enjoyment of the public lands.

In the Chain of Craters WSA and lands contiguous to the Cebolla Wilderness, vehicle use would be restricted to existing travel routes. No cross-country access in these areas would be allowed unless authorized by the BLM. However, on 12,000 acres outside wilderness and the study lands, unrestricted vehicle access (including cross-country) would continue to be available. Access to the other 135,200 acres would be restricted to 354.5 miles of existing inventoried, BLM-administered travel routes.

Issue 6--American Indian Uses & Traditional Cultural Practices

Because of the importance of the Planning Area to several local Indian tribes and pueblos, the demand for access would continue. Closure of land to public access during traditional ceremonies would benefit American Indians by ensuring their privacy. Although closure would inconvenience other users, it is not expected to occur frequently, and the BLM would work with Indian groups to restrict it to the smallest amount of land necessary for the shortest time. The number of acres and length of time for closure would be determined with each request under any alternative.

Issue 7--Cultural Resources

The scientific and cultural values found in selected sites, along with their sensitivity to disturbance, have resulted in the restriction of both motorized and nonmotorized access. The identification of some stabilized cultural sites for public use would create a demand for public access to them. Parking areas and trails would be provided to benefit users and protect the resources.

Issue 8--Wildlife Habitat

Continued use and maintenance of established wildlife projects would require periodic administrative access using travel routes and short distances of cross-country travel. Therefore, to some extent, wildlife habitat would benefit from these access routes. Wildlife exclosures that were fenced would obstruct access to those lands within the exclosure and create an inconvenience for those who must travel around the fence. If threatened, endangered or other special-status plant or animal species were found in the area surrounding a project, closure or restriction of access through this area could also inconvenience users.

Issue 9--Vegetation

The continuation of livestock grazing in the Planning Area would require that access to range improvements for the allottee be permitted. Restricted access into wilderness has created inconvenience for permittees. The existing pasture and allotment fences would impede nonmotorized, cross-country travel through the Planning Area.

For public safety and health, closures or restrictions might be needed when prescribed and wildland fire treatments were being used. The public would be notified in advanced of all prescribed and wildland fires. Periodic closures would impact public access for short periods of time.

Summary

The direct impacts of actions implemented under Alternative A on access opportunities would depend on the users' preferred or required method of travel. For those who preferred nonmotorized methods of travel, the entire Planning Area would be available. On 41 percent of the Planning Area (wilderness), nonmotorized access opportunities would be enhanced.

For those who preferred or were limited to motorized or mechanical means of transport, access for use would be provided on 59 percent of the public land in the Planning Area (135,200 acres) on existing travel routes (135,200 acres) or cross country (12,000 acres). Opportunities to access public lands and features within the Planning Area would also continue to be enhanced by BLM facilities and trails.

Wilderness Management

Under Alternative A, it is assumed that no additional lands within the Planning Area would be designated as wilderness by the Congress.

Actions proposed to resolve the issues listed below would have negligible impacts on wilderness management. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability

Issue 1--Recreation

The 100,800 acres of public lands in wilderness would continue to benefit visitors who wished to experience this type of setting. Existing primitive and unconfined recreational use of these areas would be consistent with the preservation of wilderness. The assignment of VRM Class I would help maintain the naturalness of the 100,800 acres of public land under wilderness designation.

Issue 2--Facility Development

Existing facilities located around the perimeter of the two wildernesses would continue to benefit recreational use of wilderness by providing access points for visitors.

Issue 3--Access & Transportation

Approximately 6 miles in the Cebolla Wilderness and 18 miles of access routes in the West Malpais Wilderness have been identified for authorized use by livestock permittees and property owners of private inholdings. Access for the development of non-federal mineral interests would be dealt with on a case-by-case basis. No undue or unnecessary impacts on wilderness would be anticipated from mineral development.

Issue 6--American Indian Uses & Traditional Cultural Practices

Closing of lands for short periods of time for privacy when traditional ceremonies were being conducted by American Indian groups would displace primitive recreational use. Infrequent motor vehicle use, i.e., once every 2 to 3 years, for no more than a day by American Indians whose mobility depended on such use for traditional cultural practices would be considered non-impairing to wilderness values. Consultation between the BLM and American Indians would be conducted before the agency initiated a formal closure and authorized the use of motorized vehicles or equipment.

Issue 7--Cultural Resources

Wilderness designation does not relieve the BLM of its cultural resource management responsibilities. Within wilderness the survey, collection, excavation, and monitoring of cultural sites would be done in a manner that was compatible with the preservation of wilderness. Therefore, localized impacts from these activities would not be anticipated to exceed the levels permitted under the BLM's Wilderness Management Policy. Generally, cultural resources would be left to the forces of nature; however, should additional stabilization or erosion control be needed because of the threat of losing an extraordinary resource, it would be accomplished using the "minimum tool."

Issue 8--Wildlife Habitat

Wildlife projects existing at the time of designation would be allowed to remain in place. Use of motor vehicles and motorized equipment to maintain these projects would be restricted. Continued management of existing wildlife habitat exclosures would enhance the natural character of wilderness within the fenced areas.

Issue 9--Vegetation

The development of Allotment Management Plans (AMPs) and the management of livestock to improve forage conditions would benefit wilderness through enhancing the natural character of the area. Where range improvements were placed to increase rest, not use, vegetation could be improved for the benefit of wilderness character.

Action to suppress wildfire in wilderness would have the potential to alter the natural landscape and disrupt the opportunities for solitude and primitive recreation. The severity of impacts is not measurable, but suppression actions would be executed to minimize surface disturbance and disruption of wilderness resources and uses. In the long term, the short-term adverse impacts from fire could have a positive effect on wilderness character through improved plant diversity and the return of natural ecological processes.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of non-federal surface (1,000 acres) and subsurface mineral interests within the boundary of the two wildernesses would enhance wilderness management and values. The potential for surface disturbance and development of structures that would be detrimental to wilderness character would be eliminated.

Summary

Under Alternative A, the wilderness resource would continue to benefit from the designation of 100,800 acres of public land by the Congress through P.L. 100-225. The existing uses of the Cebolla Wilderness and West Malpais Wilderness for livestock grazing, traditional and cultural practices by American Indians, wildlife habitat, and primitive and unconfined recreational activities would continue to the extent allowable under the BLM's Wilderness Management Policy and the Wilderness Act (WA). The existence of BLM facilities, state highways, county roads and BLM travel routes adjacent to these areas would continue to provide convenient user access.

The opportunities for primitive and unconfined recreational use would continue as 41 percent of the Planning Area would be available for this type of use. Wilderness designation would help to continue to maintain the existing natural character of these lands, and would provide opportunities for solitude through the application of closures and restrictions. The quality of the wilderness experience would continue to benefit from the supplemental values within these areas, including visual, cultural and historical. Acquisition of private surface and subsurface inholdings would benefit the manageability of these areas, eliminate the need for access, and reduce the potential for activities that would degrade naturalness.

Wilderness Suitability

Activities within the Chain of Craters WSA would be constrained by the Interim Management Policy. These constraints would prevent the impairment of the wilderness values of naturalness, solitude, and opportunities for primitive and unconfined recreation. The assignment of VRM Class II objectives to the WSA would help maintain the existing landscape character, preventing future unacceptable changes to the landscape elements from management actions that would be visually dominant.

American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

Alternative A emphasizes dispersed recreation, which the BLM assumes would increase throughout the life of this plan, regardless of the alternative selected. Dispersed recreation would include activities such as hunting and trapping, outfitted and guided trips, management of existing recreational facilities, and trail developments. These activities would conflict with traditional American Indian uses if visitors intruded during ceremonies or took items left as offerings. Under Alternative A the probability of such incidents would continue to increase.

Visitor use would continue to be concentrated at the Ranger Station and La Ventana Natural Arch. No conflicts would be anticipated with American Indian traditional practices at these two locations.

Other sites and areas emphasized in this alternative include The Narrows and the Narrows Rim Trail, Stone House (two widely separated historical structures), Rowe Homestead, Dittert Site, Armijo Canyon Homestead, Armijo Canyon Springhouse, other homestead sites, Aldridge Petroglyphs, Hole-in-the-Wall, CDNST, Chain of Craters, and Worley Homestead. The Ramah Navajos and other groups have identified the Chain of Craters, including portions of the CDNST, as a sensitive area. Otherwise, no specific conflicts between uses at these locations would be expected. However, archeological sites and springs are sometimes important in American Indian traditional beliefs and practices.

An inventory of the area's lava tubes could also result in intrusions into American Indian practices, although no specific conflicts have been identified. Under the Federal Cave Resources Protection Act, the BLM will keep locations of significant caves confidential.

Issue 2--Facility Development

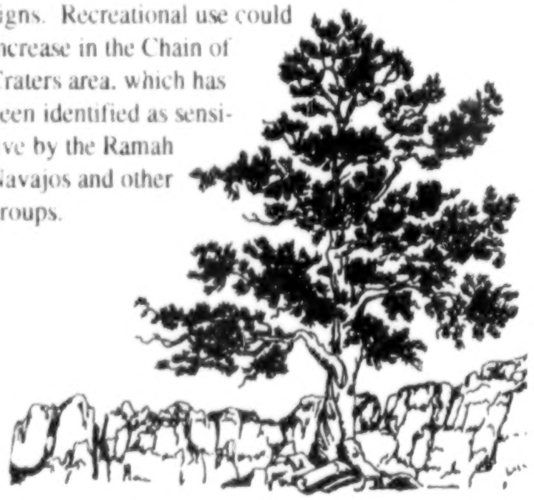
No formal campgrounds would be established. However, camping would be encouraged at The Narrows. No conflicts would be anticipated with traditional American Indian uses at this location.

Use of four trailheads proposed would not conflict with any specifically identified American Indian uses under Alternative A (at The Narrows, for the Cebolla Wilderness; in the West Malpais Wilderness; and at Cerros Brillante and Americano for the CDNST--refer to Map 10). However, mountain peaks are sometimes used for traditional American Indian practices.

If increasing mountain bike use began to result in resource damage, up to 100 miles of formal biking trails would be established in the Chain of Craters, Cerritos de Jaspe, or Brazo Units. This proposal would not result in any specific conflict with American Indian uses, but the Chain of Craters area in general has been identified as sensitive by the Ramah Navajos. Increased recreational use in this area could disrupt traditional use.

An interpretive trail would be established near the BLM Ranger Station, including a stop at the Ranger Station Reservoir. Visitor registration boxes would be established at the Dittert Site and at up to four historical homesteads. These proposals would not conflict with any known American Indian uses, but archeological sites are often sensitive.

A part of County Road 42 would be maintained as the Chain of Craters Back Country Byway, with signs. Recreational use could increase in the Chain of Craters area, which has been identified as sensitive by the Ramah Navajos and other groups.



Issue 3--Access & Transportation

Under Alternative A, all existing roads and trails (354.5 miles) on non-wilderness Planning Area lands would remain open. However, motorized cross-country travel (e.g., for piñon nut and plant gathering) would be allowed only on 12,000 acres. Vehicle use would continue to be prohibited in the wildernesses, and limited to existing roads and trails elsewhere. This alternative would provide the maximum amount of vehicle access for traditional practices and uses, which would reduce privacy but increase accessibility.

Private parties, state and county agencies are responsible for road construction and maintenance within the Planning Area. BLM approval is often required before these activities begin. Such approval would only be given after close consultation with American Indian groups who have close ties to this area.

Issue 4--Wilderness Management

No special provisions would be made for American Indian use of the two wildernesses. Access would be by foot or horseback only. This would enhance privacy, but could also preclude activities needed to continue certain traditions of American Indian groups with close ties to El Malpais.

Issue 5--Wilderness Suitability

The BLM would recommend that the Chain of Craters WSA be managed as a part of the Planning Area, rather than as wilderness. Pending a Congressional decision, access and management would remain as they are now. Release of the area from WSA status would facilitate access and use of the area by allowing vehicle travel along designated roads and trails. Such travel would also continue to be allowed along existing roads and trails on lands contiguous to the Cebolla Wilderness. This would facilitate some traditional uses such as gathering plants and piñon nuts.

Issue 7--Cultural Resources

Under the No Action Alternative, applications would be expected for three to five scientific investigations involving collection or excavation at prehistoric sites. The Pueblo of Acoma recognizes all prehistoric sites in the Planning Area as ancestral places, and in their traditional belief considers any excavation or collection to be an adverse effect. By law the BLM is required to consult with American Indians before undertaking such a project, but is not absolutely bound to conform to their wishes. If permits for these activities were granted, adverse impacts would result.

Many Pueblo people also regard active management of prehistoric archeological sites as intrusive. Under this alternative the BLM would undertake 1,192 acres of cultural resources inventory, post 100 antiquities signs, maintain stabilization projects at three prehistoric sites, and install erosion control measures at up to a dozen other sites. Some or all of these actions could constitute an adverse effect.

Under the No Action Alternative, the BLM would prohibit collection of prehistoric pottery, including sherds for use as temper in contemporary pottery. Collection of sherds is one traditional way by which Acoma people maintain ties to their ancestral past in the National Conservation Area (NCA). This prohibition would also be offensive because it would be an assertion of control by non-Acoma people over Acoma ancestral places.

Patrol and surveillance activities, which would take place under all alternatives, would help prevent vandalism at prehistoric sites. Prevention of vandalism is desirable under traditional American Indian belief.

Issue 8--Wildlife Habitat

Prescribed fires and wildland fires under prescription would increase vegetative diversity, but their effect on specific plants or areas used by American Indians in El Malpais is not known. Application of herbicides would be of concern to American Indians gathering wild plants, and any such activity would have to be closely coordinated with groups using the area for this purpose.

Issue 9--Vegetation

Springs are sometimes important places in traditional American Indian belief, and special consultations would be made with these groups when springs were fenced to improve riparian areas. No provision would be made for fuelwood cutting under Alternative A. Many traditional Indian people rely heavily upon wood for heating and cooking. If alternative sources of wood were not available on U.S. Forest Service or tribal lands, Planning Area restrictions on fuelwood cutting would have a negative impact.

Issue 10--Boundary & Land Ownership Adjustments

No boundary changes are proposed under Alternative A, including the Acoma request that 960 acres of tribal lands be excluded from the NCA. The proposed acquisition of lands and mineral rights under Alternative A would improve access for traditional uses and forestall conflicting uses such as mineral development.

Summary

Increasing recreational use would have the most serious impacts on traditional American Indian practices in the Planning Area. It would create long-term consequences by reducing privacy for traditional activities and increasing the likelihood of non-Indian intrusions into them. Dispersed recreational use would probably continue to increase, although at a slower rate than under Alternative B. Several proposals under Alternative A would result in increased recreational use, including some interpretation, maintenance and signing of the Chain of Craters Back Country Byway. Fewer recreational facilities are proposed under this alternative than under Alternative B (Resource Use), but more than under the Alternative C (Natural Processes). Several facilities would accommodate increased use in the Chain of Craters WSA, which has been identified as sensitive for the Ramah Navajos and other groups.

More vehicle access would be allowed under Alternative A than under any other alternative. This would increase the ease of access for traditional activities, but reduce privacy. Vehicle access into wilderness for traditional American Indian practices would not be allowed.

Other activities and decisions proposed under Alternative A could have negative impacts. Archeological research involving excavation, signing, ruin stabilization, and erosion control intended to protect ruins would be considered intrusive by some traditional people. Prohibitions on collection of prehistoric pottery for use as temper in contemporary pottery would also constitute an adverse effect. Certain management actions such as a lava tube inventory, authorization of road realignments, and scientific study of geological and other natural phenomena could also result in intrusions or damage to places important in traditional practices.

Chemical treatment of vegetation could adversely affect American Indian people who were gathering herbs and other plant products. Depending on the availability of alternative sources, prohibitions on fuelwood gathering may also have an adverse impact. Continued inclusion of certain Acoma tribal lands in the Planning Area may encourage trespass and thereby increase the likelihood of intrusion into traditional practices. Acquisition of lands and mineral interests under Alternative A would help to exclude uses incompatible with traditional American Indian uses, and would therefore have a positive impact.

Cultural Resources

Under Alternative A, actions proposed to resolve the issues listed below would have no impact on cultural resources. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 2--Facility Development
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat

Issue 1--Recreation

Proposals that would lead to increased visitation would result in more illegal surface collection and casual excavation of prehistoric sites, although the extent of these impacts cannot be quantified. When recreational use was dispersed as it would be under Alternative A, adverse impacts would be more difficult to control than if use was concentrated in defined areas or corridors, as under Alternative B. (Use in defined areas can be developed to draw the focus away from sensitive areas.) This use would include camping, hiking, hunting and picnicking.

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Designation of the Chain of Craters Back Country Byway, and development of several trailheads and designated hiking areas on the west side of the Planning Area would help distribute recreational use away from sensitive areas. On the east side of the Planning Area, where cultural resources are much more dense, most developments would be located at La Ventana Natural Arch and The Narrows, both which are outside areas of major site concentrations.

Under Alternative A, the BLM would encourage public visitation at the Dittert Site, the Aldridge Petroglyphs, the Ranger Station Reservoir, and up to six historical homesteads. Documentation is sufficient to protect scientific values at the Dittert Site and the homesteads, although the physical structures at all of these sites would require increased maintenance. Systematic documentation would be needed at the Aldridge Petroglyphs to prevent loss of resource values, and data recovery through systematic collection of surface materials would be needed at the Ranger Station Reservoir. Numerous undocumented archeological sites near the Aldridge Petroglyphs would be subject to impacts such as surface collection if public visitation increased.

Issue 3--Access & Transportation

Limiting motor vehicles to existing roads would protect prehistoric and historical cultural resources by making it more difficult for scavengers and looters to bring in excavation gear or transport away materials such as building stone or weathered wood. At the same time, patrol by BLM specialists and law enforcement personnel would be more difficult.

However, under Alternative A, a maximum number of roads would remain open (354.5 miles). In addition, approximately 5 percent of the Planning Area (12,000 acres) would be available for unrestricted cross-country vehicle use, including the Breaks Non-NCA Unit, which has areas of high site density. In addition to increased vandalism, unrestricted cross-country vehicle use could result in direct damage as vehicles ran over archeological sites. Increased erosion, another negative impact, could also occur in the unrestricted areas.

Issue 4--Wilderness Management

Resource deterioration due to natural decay and erosion would be allowed to continue unless unusual resources were threatened, and even then remedial actions would be restricted by wilderness considerations. However, wilderness is generally patrolled more intensively than other BLM land, so Archeological Resource Protection Act (ARPA) violations would more likely be discovered and reported.

Issue 5--Wilderness Suitability

Current information suggests that few cultural resources exist in the Chain of Craters area, so its continued management as a WSA would have little effect on cultural resources. Under Alternative A, no contiguous lands would be added to the Cebolla Wilderness, so future excavation and scientific study of any inventoried sites on those lands would not be limited by either the Wilderness Management or Interim Management Policy.

Issue 7--Cultural Resources

Under Alternative A, the BLM would emphasize conservation of cultural resources while still making reasonable allowances for archeological investigation. Provisions under this alternative for National Historic Preservation Act (NHPA) compliance, inventory, signing, access easements and consolidation of ownership, road closure, monitoring, stabilization, and fire suppression would have slightly positive, long-term impacts on scientific and public values.

Scientific investigations would provide current information, but in some cases, would destroy portions of the affected sites, leaving them unavailable for research using future technologies and approaches. This would be a negative long-term impact to particular properties but, at the levels anticipated under this alternative (fewer than five projects), would not affect the long-term scientific potential of the Planning Area as a whole.

Proposals under this alternative would be limited primarily by the level of funding available to address problems of cultural resource management. Measures described for this alternative such as patrolling, monitoring and signing would be effective on a limited scale in reducing damage due to erosion, vandalism and casual artifact collection associated with visitors.

Issue 9--Vegetation

Livestock grazing can adversely affect cultural resources by reducing vegetation, thereby contributing to erosion. Trampling can break artifacts on the ground surface, and livestock sometimes rub against historical structures, contributing to their deterioration. Erosion affecting cultural resources would undoubtedly continue, but would be reduced by improved grazing management under the No Action Alternative. Eight historical homesteads in the Planning Area have been fenced to exclude livestock, and under this alternative additional fencing would be installed if warranted.

Range improvements, spring developments, and watershed structures proposed under the No Action Alternative would be subject to environmental analysis, and their potential adverse effects could be mitigated through avoidance or data recovery. Similarly, chemical, mechanical, and biological vegetative treatments under Alternative A would be on a small scale and would be evaluated on a case-by-case basis through separate Environmental Assessments (EAs).

Fires, including prescribed fires and wildland fires under prescription, could destroy historical sites with flammable elements and damage the scientific potential of surface and near-surface archeological materials. Activities associated with fire suppression such as establishment of fire camps and construction of fire lines could also result in adverse impacts to cultural resources. Under Alternative A, eight to twelve historical sites have been identified for protection from fire, and other newly discovered sites could be added to this list. Reconnaissance-level surveys for sites with flammable materials would be conducted in areas where prescribed fires were proposed. Inventories would not be to Class III standards if fires were proposed in areas of low site density (refer to Map 37). Class III inventory would be considered in zones of high site density, and a cultural resources advisor would be required during fire suppression activities, regardless of the source of ignition. To ensure site protection, fire would not be used in some areas.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition proposals could benefit cultural resources by eliminating mineral entry and inadvertent disturbance. Important cultural resources in the Breaks Non-NCA Unit would receive more intensive management if it was acquired.

Summary

NCA designation and the provisions of this plan would be effective in protecting cultural resources from damage as a result of deliberate, planned actions. However, natural and human factors would continue to degrade cultural resources. Natural deterioration would continue to affect historical homesteads, while gully and sheet erosion would affect archeological sites. Both types of sites would continue to be vulnerable to illegal collection, looting and vandalism.

Illegal surface collection would be primarily an unintended effect of recreational uses. This impact could be partly mitigated by positive interpretive messages, and by building recreational developments that encouraged use in non-sensitive areas. Documentation of archeological sites before they were seriously affected by surface collection could also partly offset the adverse effect of this activity.

Recreational developments and designated use locations would generally be in non-sensitive areas under Alternative A, although additional systematic documentation would be needed in several areas proposed for cultural resource interpretation. Access would remain essentially as it is now, with no additional impact on cultural resources. (Note: Survey provisions would be more stringent under the other alternatives.)

Cultural resource management activities intended to have a positive effect such as stabilization, erosion control, patrolling and monitoring would be limited to the most important sites and restricted in wilderness areas. Policies regarding archeological research that involved collection and/or excavation would be relatively liberal under this alternative.

Most developments, vegetative treatments, wildlife habitat projects and other similar proposals would be small in scale. With appropriate survey and mitigation, these proposals should have no effect on cultural resources.

Wildlife Habitat

Direct impacts associated with trails and parking areas would generally be long term, while those from vegetative treatments using fire would be short term. The following are the estimated acres of habitat disturbed by facilities in the Planning Area.

- Trails: ⅓ acre for each mile of trail (3 feet wide).
- Parking: for 30 vehicles--1½ acre, 20 vehicles--1 acre, 10 vehicles--½ acre, and 4 to 6 vehicles--¼ acre.
- Kiosks/Pullouts/Signs: 5 to 10 square feet (not including parking).

Prescribed fires would average 500 acres each in size under Alternatives A and D, and 750 acres under Alternative B. Wildland fires under prescription would average 1,000 acres each under any alternative.

In addition to direct impacts to habitats, a zone of disturbance (acres potentially disturbed by human activities) would result from each type of facility as identified below.

- Established Trails: 80 acres (⅛ mile wide) for each mile of trail.
- High-Intensity Use Areas (campgrounds, Ranger Station, La Ventana Arch): 640 acres (1 square mile) around each area.
- Moderate Use Areas (trailheads, pullouts, picnic areas): 160 acres (¼ square mile) around each area.
- Low-Use Areas (kiosks, interpretive tours): 40 acres (1/16 square mile) around each area.

Water catchment devices come in many types and sizes, but most measure about 20 feet by 20 feet (400 square feet). In addition, a square area measuring 100 feet on each side is generally fenced to protect each water catchment.

Fences would generally disturb an area of vegetation measuring approximately 50 to 100 square feet for each mile built. Where a fence is constructed through closed woodlands, a loss of approximately ¼ to ½ acre of trees per mile of fence would also occur.

For a more complete description of typical wildlife projects (water developments, fences, vegetative manipulation), refer to Appendix P.

Under Alternative A, actions proposed to resolve the issues listed below would have no impacts on wildlife habitat, or the magnitude of the impacts would be negligible. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources

Issue 1--Recreation

Hunting and trapping would continue within the Planning Area under any alternative under NMDG&F regulations. In the short term, individual animals would be lost to these activities. However, because the State of New Mexico's main goal is to maintain stable and productive populations for future generations, other animals would be born to take their place.

Issuance of Special Recreation Permits (for hunting guides, mountain bike events, pack-animal trekking) under the BLM's existing process (which includes a site-specific EA) could continue to impact wildlife by disturbance within the immediate vicinity of the actions under any alternative. However, these would be considered dispersed and intermittent activities; no concentrated use or impact in any specific area is anticipated.

Within the Planning Area, three existing recreation areas (the Ranger Station, La Ventana Natural Arch, and The Narrows) would continue to be used for various activities under any alternative. Concentrating visitor use into these specific areas would cause a greater impact on the animals in or near them, but in the long term would reduce the number and size of impacts on wildlife and their habitats throughout the overall Planning Area. These areas have already created a direct loss of approximately 7 acres of habitat (2 at the Ranger Station, 2 at La Ventana Natural Arch, and 3 at The Narrows) from camping, picnicking, parking and structures. An additional zone of disturbance to wildlife species in conjunction with these areas (e.g., noise) is estimated at approximately 640 acres (1 square mile) for each area, for a total of 1,920 additional acres (refer to Table 4-1).

The continuation of camping (at four sites), the addition of one portable toilet, and the maintenance of a horse gate at The Narrows are not anticipated to create any additional loss of wildlife habitat. Most usable space for camping, picnicking, and parking within The Narrows has already been disturbed by past recreational use. (Note: EAs were completed for La Ventana Natural Arch and Ranger Station in 1989 and 1990.)

Four trails (the CDNST, Ranger Station Reservoir, La Ventana Natural Arch, and Narrows Rim) would be emphasized for hiking activities under Alternative A. In addition, the Hole-in-the-Wall Trail would be used regularly because of its location. A cumulative loss of approximately 4 acres of habitat and a wildlife disturbance zone of approximately 960 acres would occur from continued use of these trails (refer to Table 4-1). (Except for about half of the CDNST, these treadways already exist.)

Portions of the CDNST treadway through the Planning Area totalling 12.5 miles have now been constructed. The treadway is anticipated to cross about 25 miles of the Planning Area under any alternative, which would create a direct loss of about 8 acres of habitat. An additional zone of wildlife disturbance is estimated at approximately 2,000 acres. (Note: Impacts of the CDNST have already been addressed in another plan--USDA, FS 1993.)

Conducting a mile-long interpretive hike on the Nature Trail at the Ranger Station would cause direct surface disturbance. Less than half an acre of habitat would be lost because of the treadway, with an additional zone of disturbance of 80 acres.

The trail at La Ventana Natural Arch is the most popular within the Planning Area, used by thousands of hikers annually. It is ¼-mile long and lies entirely within the recreation site. Impacts associated with this site have already been evaluated in an Environmental Assessment (USDI, BLM 1989).

The Narrows Rim Trail, approximately 3.5 miles in length, is used for access into the Cebolla Wilderness. Continued use of this trail would perpetuate a direct loss of about an acre of habitat from the treadway, with an additional zone of disturbance of approximately 320 acres.

The Hole-in-the-Wall Trail is approximately 7 miles long, with 2 acres of habitat lost from the treadway, and an additional zone of disturbance of approximately 560 acres.

Interpretive programs and activities (e.g., hikes, walks, lectures and tours) would occur at established recreation and homestead sites and dispersed locations throughout the Planning Area during the summer months. The anticipated impacts would include disturbance of approximately 3 acres of habitat from foot traffic (¼ acre per site at 12 sites) and a wildlife disturbance zone of approximately 480 acres (40 acres per site) within the immediate vicinity.

Dispersed camping, hiking, picnicking, horseback riding, and mountain biking outside established recreation sites and trails would occur infrequently in any one given area. These activities would create temporary disturbances for wildlife species in the immediate vicinity of the activity (e.g., birds flushed from trees and rabbits from bushes), but would not be anticipated to cause any long-term impacts. It is estimated that wildlife would be disturbed on 640 acres per year from these dispersed activities under Alternative A (refer to Table 4-1).

Educating visitors about wildlife-related concerns could benefit wildlife habitat and/or individual species by alleviating some impacts. Topics covered could include the importance of low-impact, Tread Lightly and Leave No Trace recreation; wildlife use of dead and down trees and logs, and wetlands; disturbances caused by human-wildlife interactions; and the role of fire, fire management and fuelwood harvesting for wildlife conservation.

TABLE 4-1

ESTIMATED ACRES OF WILDLIFE HABITAT DISTURBANCE

Type of Action/ Impact	Alternatives			
	A	B	C	D
Short-Term Impacts[a] Prescribed Fire	500[b]	3,000	0	2,000
Wildland Fire Under Prescription	1,000	1,000	1,000	1,000
Woodland Thinning	0	100	0	100
Totals	1,500	4,100	1,000	3,100
Long-Term Impacts[c] The Narrows	3/640[d]	3/640	3/640	3/640
La Ventana Arch	2/640	2/640	2/640	2/640
Ranger Station	2/640	2/640	2/640	2/640
New Campground	0	10/640	0	8/640
CDNST Treadway	8/2,000	8/2,000	8/2,000	8/2,000
CDNST Trailheads	1/320	3/320	0	2/320
Misc. Trailheads	4/960	24/6,720	4/960	15/3,540
Interpretive Hikes/ Tours	3/480	4/560	0	2/280
Signs, Kiosks	1/160	4/640	0	1/160
Dispersed Recreational Activities	0/640	0/1,280	0/320	0/960
Wildlife Developments	20/0	60/0	3/0	40/0
Totals	44/6,480	120/14,080	22/5,200	83/9,820

Notes: [a] Short-term impacts would occur annually.

[b] Acres of direct disturbance from vegetative treatments to wildlife habitat.

[c] Long-term impacts would last for the life of the plan (15 to 20 years).

[d] Shows 3 acres of direct disturbance to wildlife habitat (e.g., from treadway, parking) and 640 acres of intermittent species disturbance from human presence and noise.

Issue 2--Facility Development

Under Alternative A, new facilities would be limited to those associated with the establishment of the treadway for the CDNST, one additional portable toilet at The Narrows, and those facilities needed to mitigate any resource damage. These few facilities would have limited additional impacts on wildlife within the Planning Area.

In addition to developing the treadway for the CDNST, the BLM would build two primitive trailheads near Cerro Americano and Cerro Brillante, with graded parking for 10 vehicles at each location. These parking areas would cause long-term loss of an acre of habitat (approximately ½ acre for each site). In addition, wildlife disturbance near the trailheads would be expected over approximately 320 acres (160 acres for each site--refer to Table 4-1).

New signs and kiosks (up to four each) would be installed and maintained along CR 42 (the Chain of Craters Back Country Byway). All these developments would have direct impacts on habitat; however, most would be installed along established roads and create very little additional disturbance. The four kiosks would directly disturb approximately an acre of habitat (¼ acre each for parking), with an additional disturbance zone of 160 acres total.

Maintaining CR 42 as a Back Country Byway and allowing sightseeing and driving for pleasure on 354.5 miles of roads throughout the Planning Area would continue to directly disturb wildlife species near the road with noise and harassment. Increased use of this byway and other existing roads would be expected in the future; this would also increase the disturbances to wildlife.

Issue 3--Access & Transportation

Under Alternative A, 354.5 miles of roads outside wilderness would be open to motor vehicle use (refer to Table 2-7). The impacts of continued use of these roads on wildlife habitat are discussed above under Issue 2, Facility Development.

Issue 4--Wilderness Management

Continued management of 100,800 acres of public land as wilderness would benefit wildlife and their habitats because human activities in these areas would be limited in scope and extent. However, wilderness management restrictions could also preclude or modify certain wildlife habitat improvement projects within these areas, if proposed.

Issue 5--Wilderness Suitability

The recommendation not to designate the Chain of Craters WSA as wilderness would not change any wildlife protection or benefits. If the Congress dropped the Chain of Craters from wilderness study, the BLM would use appropriate protective measures under P.L. 100-225 to protect and enhance wildlife habitat within the area. If the Congress designated the area as wilderness, it would be managed in accordance with the Wilderness Act.

The 10,380 acres contiguous to the Cebolla Wilderness would not be recommended as wilderness and would continued to be managed in accordance with the RMP. Wildlife would not gain the benefits of protection from wilderness designation, but any habitat improvement projects proposed would not be limited by wilderness management restrictions.

Issue 8--Wildlife Habitat

Under Alternative A, up to three wildlife habitat maintenance projects per year would be undertaken to meet existing wildlife needs throughout the Planning Area. The maximum anticipated development annually would include one prescribed fire and two facility project (e.g., fences, water catchments). Each prescribed fire would average approximately 500 acres in size, which could be lost as wildlife habitat for the short term. The facility projects would disturb approximately ½ acre per project (1 acre/ year), for a total of 20 acres over the life of this plan (refer to Table 4-1 and Appendix P).

Under any alternative, implementing habitat management projects would produce short-term negative impacts and short- and long-term benefits. Projects such as prescribed fire would cause a temporary loss of vegetation and habitat, but would improve vegetative habitat productivity over the long term. The overall loss of forage would be minimized within any one wildlife habitat area, and different areas would be burned at different times to create habitat in various stages of development.

Issue 9--Vegetation

Vegetative manipulation under Alternative A would be limited to livestock grazing and riparian management practices. Managing allotments according to existing AMPs/ CRMPs generally would increase vegetative composition, production and cover, and improve vegetative condition and the quality of wildlife habitat. In the long term, improving ecological condition through grazing management practices would reduce competition between livestock and wildlife for forage, cover, and space.

Because of the limited use of vegetative treatment methods under Alternative A, however, benefits to wildlife habitats would be limited in the short term. No planting of riparian species or removal of exotic species (e.g., saltcedar, Russian olive) would be undertaken under this alternative. Therefore, achieving properly functioning condition for the riparian areas within the Planning Area would require a longer period of time.

Issue 10--Boundary & Land Ownership Adjustments

Acquiring private land identified in the Land Protection Plan (1989) would benefit wildlife through improved manageability. The ability to maintain and improve wildlife habitats through the use of prescribed fire is dependent on having large blocks of contiguous public lands. The unpredictability of fire, even under controlled conditions, generally precludes its use in areas with intermingled state and/or private lands. Blocking up lands throughout the Planning Area would enhance the ability of the BLM to use wildland and prescribed fires to maintain and improve wildlife habitat.

Summary

Under Alternative A, activities associated with recreation, interpretation, and facility development would result in the loss of 24 acres of wildlife habitat over the life of the plan. In addition, disturbance to species would occur on approximately 6,480 acres, mainly near areas of high human use or developed facilities. Dispersed activities (e.g., hiking, sightseeing, guided tours) would generally create intermittent impacts (a few hours or days) to wildlife, depending on the specific duration of the activity. Activities associated with wilderness and WSAs would generally provide short- and long-term benefits to wildlife and their habitats because of increased protective measures. Habitat maintenance projects and vegetative treatments would cause the short-term habitat loss of 1 acre per year for facilities, and 1,500 acres per year for prescribed and wildland fires. However, these wildlife and vegetation treatments are anticipated to improve the long-term productivity of the area.

Threatened, Endangered & Other Special-Status Species

The BLM is conducting informal consultation with the U. S. Fish & Wildlife Service (FWS) under Section 7 of the Endangered Species Act (ESA), which is anticipated to be completed by early 1999. This informal process will determine if formal consultation on any specific species or habitat is needed. Because the BLM is committed to protecting T&E and other special-status plant and animal species, in particular under the ESA and BLM policies, no actions under any of the alternatives would be allowed to adversely affect any of these species.

Vegetation

Under Alternative A, actions proposed to resolve the issues listed below would have no impact on accomplishing the vegetative objectives discussed in Chapter 2. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Under Alternative A, more dispersed types of recreational opportunities would be encouraged. This management preference would minimize the destruction of vegetation by physical means such as trampling and cutting of trees. Interpretative themes in

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the Planning Area would promote a land use ethic that encouraged coexistence with natural ecological processes. As a result, the impacts to vegetation associated with human use would be fewer than if no interpretation was done.

Issue 2--Facility Development

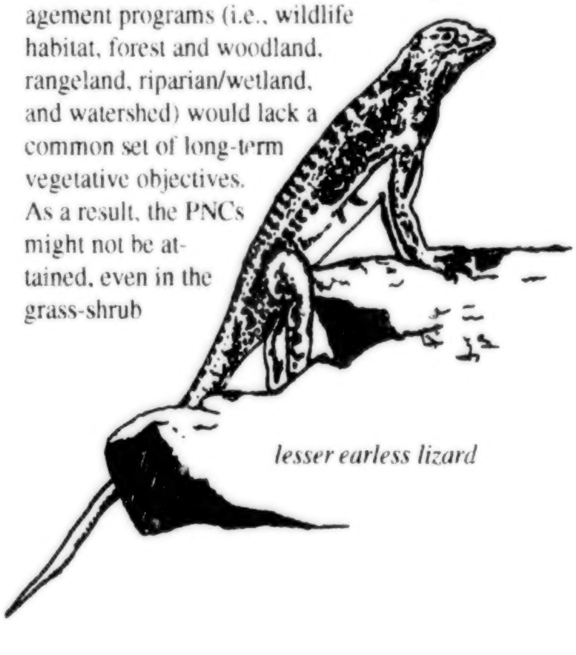
Construction of existing facilities such as buildings, parking lots, and picnic areas has caused vegetation to be destroyed. For the most part, the vegetation around existing facilities would be adversely affected by increased and concentrated visitor use. However, directing use to specific areas would result in fewer overall impacts to vegetation than random, unmanaged use. Site-specific assessments would continue to be made for developed facilities.

Issue 3--Access & Transportation

Designating public lands as limited or closed to off-road vehicle use would reduce the amount of destruction to vegetation. Providing reasonable access, while attempting to reduce conflicts between users and prevent damage to the natural resources, would reduce the incidences of willful violations and subsequent destruction of vegetation.

Issue 9--Vegetation

Achieving the Potential Natural Communities (PNCs) would not be the vegetative goal for the Planning Area under Alternative A. The vegetative management programs (i.e., wildlife habitat, forest and woodland, rangeland, riparian/wetland, and watershed) would lack a common set of long-term vegetative objectives. As a result, the PNCs might not be attained, even in the grass-shrub communities where the greatest likelihood of accomplishment during the life of the plan would exist.



lesser earless lizard

Management of the soil, air and water resources would benefit watershed and vegetation, as would changes in livestock practices and the use of fire. Management for stabilizing watersheds would reduce overland water flow and promote water infiltration. As result, plant productivity would be expected to increase, allowing for progress in accomplishing vegetative objectives.

Vegetation--Forest & Woodland Resources

Under Alternative A, actions proposed to resolve the issues listed below would have no impacts on accomplishing the vegetative objectives for forest and woodland resources. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 3--Access & Transportation

Signing and enforcement of the off-road vehicle designations governing access would deter the unauthorized removal of wood products.

Issue 4--Wilderness Management

As a result of the "minimum tool" requirements, the cost of vegetative improvement projects such as fire would be higher in wilderness than in areas not subject to the same restrictions. The cost might not be prohibitive, but areas with fewer restrictions could receive higher priority for improvement.

Issue 5--Wilderness Suitability

Fire would be the only management action allowed to improve vegetation until after a Congressional decision on wilderness designation of the Chain of Craters WSA.

Issue 7--Cultural Resources

When planning and designing forest and woodland improvement treatments, the BLM would make provisions to protect cultural resources. Use of fire could be prohibited in some areas.

Issue 9--Vegetation

For ponderosa pine to be reestablished in its natural habitat, the quantity of piñon-juniper trees would have to be reduced. However, under Alternative A, no forest and woodland management actions such as thinning would be proposed. The opportunity to restore ponderosa pine communities would be dependent on fire or disease. Prescribed fires and wildland fires under prescription would be used to prevent catastrophic fire and protect property. Resource enhancement would be a secondary benefit. Interpretation could increase public acceptance of fire as a vegetative management tool. However, overall the ponderosa pine community would continue to decline and the piñon-juniper woodland community would continue to expand in the open woodland/savanna locations.

Achieving the objectives for forests and woodlands would rely on wildland fires under prescription. Fire may not come within the life of the plan, but if it did, it could be cataclysmic because of the large fuel load that exists.

Vegetation--Rangeland Resources

Under Alternative A, actions proposed to resolve the issues listed below would not impact rangeland resources. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 2--Facility Development
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Construction of rangeland improvement projects (e.g., fences, pipelines, water wells) could be affected by recreational use. To protect visual resources, projects could be relocated, redesigned or not allowed.

Issue 3--Access & Transportation

Limiting vehicles to existing roads would have positive effects on livestock grazing management. Fewer acres of vegetation would be disturbed by vehicular use, preventing loss of forage. Increased forage from preventing road expansion would provide more ground cover to slow surface runoff and soil erosion.

Issue 4--Wilderness Management & Issue 5--Wilderness Suitability

Wilderness and WSA management would restrict vegetative management tools, making accomplishment of rangeland management objectives more difficult. Where range improvements were placed to increase rest, not use, vegetation could be improved for the benefit of wilderness character.

Issue 9--Vegetation

To ensure accomplishment of vegetative objectives, planned rest from livestock grazing management would be increased. As objectives were attained, increased quality as well as quantity of forage species would be expected. The abundance of grasses and desirable shrubs would improve. As these forage resources improved, livestock grazing rest periods could be better managed to ensure long-term vegetative improvements.

Rangeland improvements would continue to be built to allow improved patterns of livestock grazing use. However, the vegetative objectives would not be considered in AMPs/CRMPs. Minimum rest periods from livestock grazing use would continue to favor warm-season grasses. Cool-season grasses and desirable shrubs would continue to be underrepresented. As a result, vegetation would remain in the mid to high development stages and very few acres would reach the PNCs.

Management of fire and the soil, water, air, forest and woodland resources could produce some short-term inconvenience to livestock grazing management. For example, an area proposed for burning could require additional rest from livestock grazing use. To minimize the effect on ranching operations and benefit rangeland management in the long term, objectives and actions from these other programs must be proposed in AMPs.

Social & Economic Conditions

Under Alternative A, actions proposed to resolve the issues listed below would not have direct economic or social impacts. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

As measured in visitor use, recreational activity is based on traffic counts and an assumed average occupancy of 2.8 persons per vehicle. The BLM's traffic counts for the Planning Area are taken at La Ventana Natural Arch. Based on these figures, visitor use has grown by an average of nearly 12 percent per year between 1990 and 1996. The first three years showed rapid growth rates. In the last three years, growth rates have decreased, and it is expected that visitor numbers will continue to increase at a lower rate.

In 1996, a total of 68,750 visitors used the Planning Area. To calculate the economic impact of this visitation, an expenditure of $65 per visit has been used. Based on these figures, visitors to the area expend approximately $4,468,750 per year. It is assumed that this money turns over one additional time in the local economy before it leaves the county. Therefore, Cibola County receives nearly $9 million per year as a result of Planning Area visitor expenditures (direct and indirect). This is approximately 3.2 percent of the total personal income reported for Cibola County in 1994.

It is estimated that visitor expenditures would increase at about 5 percent per year for the next 10 years. The resultant income would increase at about the same rate (approximately $14,660,000 in 1994 dollars in 2008).

Recreation-related employment figures were estimated using the 5-year economic census series (U.S. Department of Commerce, 1992a & b, 1994b). Expenditures by Planning Area visitors contribute substantially to the employment of approximately 200 people in Cibola County. This employment figure is expected to reach 300 by the year 2008.

Issue 6--American Indian Uses & Traditional Cultural Practices

Social impacts related to American Indian concerns are not expected to be measurable under any of the alternatives. Sociocultural impacts would occur to the American Indian people who have used the area for religious and cultural purposes over the years and would not have the same level of access and use because of proposed development.

Issue 9--Vegetation

Livestock grazing can create direct economic impacts. The Planning Area includes 305,400 acres, 67 percent of which (205,000 acres) is useable for livestock grazing. At 12.6 acres per Animal Unit Month (AUM), these 205,000 acres would support 16,288 AUMs or the forage required to maintain 1,357 cows for a year. The New Mexico Agricultural Statistics (U.S. Department of Agriculture 1994) show receipts for nondairy cattle on farms as of January 1, 1994, in Cibola County at an average of $627 per head. Using these figures, receipts from Planning Area livestock production would be approximately $851,000 per year, or 11.3 percent of the cow and calf receipts in 1994 for Cibola County.

Summary

Few social or economic impacts would occur from implementation of Alternative A. Impacts to minority and low-income populations and communities have been considered, with no significant impact anticipated.

Soil, Water & Air Resources

Under Alternative A, actions proposed to resolve the issues listed below would have no impacts on the soil, water and air resources of the Planning Area. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation & Issue 2--Facility Development

Management of the Planning Area for dispersed recreational use would result in less overall surface disturbance, soil erosion, and impacts to water and air than if the area was being managed for intensive, concentrated recreational use (as under Alternative B). Limited increases in surface runoff and erosion could be expected around existing facilities such as the Ranger Station, parking lots and picnic areas because of continued increases in visitor use.

Issue 3--Access & Transportation

Designating public lands in the Planning Area as limited or closed to off-road vehicle use would reduce surface disturbance and erosion. Providing reasonable access while attempting to reduce conflicts between users and prevent damage to the natural resources would reduce the incidence of willful violations and subsequent soil erosion.

Issue 9--Vegetation

Managing to reach the vegetative objectives discussed in Chapter 2 would have a positive impact on the Planning Area's watersheds. The amount of ground covered by vegetation is expected to increase, which would reduce the amount of soil surface area exposed to the forces of wind and water erosion.

To attain the vegetative objectives, forests and woodlands would be managed to contain trees of various ages. Changing the age structure would increase the number of openings between clumps of trees, allowing for increases of herbaceous growth under the trees and providing more developed, complex vegetative layers. As a result, surface runoff would be reduced and erosion decreased.

Changes in livestock grazing management would continue to be made where vegetative utilization and trend needed to be improved. AMPs/CRMPs containing specific watershed objectives would be developed for these areas. As a result of the changes in livestock grazing management, perennial herbaceous ground cover would increase, reducing erosion potential. Small erosion-control structures could also be developed to further reduce soil loss.

Wildland fires under prescription would be used as tool to help attain vegetative objectives. Immediately following burning, more ground surface could be exposed to the forces of wind and water, and thus to increased soil erosion. Following the burns, increased herbaceous vegetative ground cover would be expected. As a result, the opportunity for erosion would decrease. Smoke would impact air quality during burning, but no long-term impacts are expected.

Visual Resource Management

Under Alternative A, actions proposed to resolve the issues listed below would have negligible short-term or long-term impacts that would exceed the objectives of the VRM classes assigned to public lands within the Planning Area. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources

Issue 1--Recreation

Dispersed recreational activities spread out over the Planning Area should have little noticeable impact on overall visual resources. Localized visual impacts from the destruction of vegetation, exposure of soil, and erosion would generally be associated with social trails, campsites, and vehicle pullouts where frequent and continuous recreational use occurred (usually away from key viewing points).

Visual resources on 211,800 acres of public lands would benefit through the assignment of VRM Class I and II management objectives. Application of these two classes would prevent activities that would create noticeable changes in the elements of form, line, color and texture found in the landscape.

The visual resources on 14,110 acres of VRM Class III lands would be subject to a greater degree of change. However, lands assigned Class III usually do not rank as high scenically, so change is usually not a sensitive issue. Impacts to visual resources on the remaining 22,000 acres of non-NCA public lands would be handled on a case-by-case basis. Mitigation would be applied to minimize potential impacts should a project be authorized there. Interpretation of the natural features through brochures and guided hikes would improve visitor appreciation of the scenic quality of the Planning Area and thus contribute to more careful visitation.

Issue 2--Facility Development

Existing recreational facilities would continue to be part of the landscape. The developed facilities and concentration of recreational use there would continue to create minor localized impacts to visual resources. However, when these facilities were built, the location, materials, colors and construction methods were considered. This helped to minimize visual contrasts and lessened the impacts.

Issue 3--Access & Transportation

The 354.5 miles of BLM-administered travel routes, along with state highways and county roads, would continue to provide visitors an opportunity to enjoy the quality of the visual resources in the landscape. The alteration of the landform and the disturbance to vegetation from these linear routes has created visual contrasts that would continue under Alternative A.

Issue 4--Wilderness Management

A total of 100,800 acres of designated wilderness, or 41 percent of the public land in the Planning Area would be managed under the most restrictive VRM Class I. Management under this class would benefit the area's visual resources through restricting activities that would create visual contrasts evident to the casual observer.

Issue 8--Wildlife Habitat

The maintenance of wildlife exclosures to prevent disturbance of vegetative cover would benefit the visual resources of the Planning Area.

Issue 9--Vegetation

Use of the Planning Area by livestock has resulted in the presence of range improvements and trampling around them. Visual impacts from these developments would normally be very localized and would initially have greater impact in the short term than over the long term. The existing facilities would be acceptable under VRM Class II objectives. As forage conditions improved over the long term under management to meet vegetative objectives, visual resources would be enhanced.

Fire suppression over the years has created a buildup of natural fuels and the potential for a high-intensity wildland fire that would create a more obvious landscape change. The seriousness of this potentially negative impact on visual resources would depend on many variables, including fire intensity, size, fuels and location.

Issue 10--Boundary
& Land Ownership Adjustments

The acquisition of non-federal lands and mineral interests within the Planning Area would prevent developments that could be detrimental to visual resources. This would be in addition to the acquisition of scenic or conservation easements along approximately 76 miles of state and county highways and roads in the Planning Area, which would benefit visual resources by preventing development of structures or alteration of the landscape that would degrade the area's natural beauty.

Cumulative Impacts

Social & Economic Conditions

P.L. 100-225 provided for protection of traditional cultural uses and allowed a 10-year period for adjustments in livestock operations before grazing was excluded from the National Monument. No one is believed to have been forced out of the ranching lifestyle because of this exclusion.

Economically, 10 livestock operators have had their borrowing capacity reduced by approximately $850,000 (total) because of the reduction of forage capacity in the National Monument portion of their ranching operation. The 10-year notice of loss of these AUMs has allowed for this change to be made in a manageable way.

Under Alternative A, visitors are expected to continue to spend an estimated $6,630,000 annually (102,000 visits at $65 per day) in the Grants area. These dollars are expected to turn over one additional time (the multiplier effect) in Cibola County, adding a total of $13,260,000 to the local economy annually. This would amount to approximately 5 percent of the total personal income reported for Cibola County for 1994 (U.S. Department of Commerce, Bureau of Economic Analysis 1994a). A few employment opportunities have been created by NCA and National Monument designation, raising the standard of living for as many as 300 families.

Recreation

Visitors to the NCA have increased in the past few years, according to numbers from a counter installed at La Ventana Natural Arch. Between 1990 and 1996, visitor numbers increased substantially (37,572 to 63,252; up nearly 83 percent), but the rate of growth has been slowing from near 50 percent in 1991 to 11 percent in 1996. NPS figures for National Monument visitation show a similar trend. Visits are expected to total 102,000 per year under Alternative A.

Vegetation--Rangeland Resources

Based on vegetative monitoring results, some short-term AUM adjustments would be implemented, most likely in the form of changes in management practices. It is expected that the adjustments would bring ecological changes that would result in the current Planning Area allotment preferences becoming sustainable in the long term.

A cumulative effect would result from earlier BLM adjustments being added to the National Monument adjustments completed in January 1998. In 1992 the BLM reduced the preference on one group of allotments from 33,067 to 31,372 AUMs (a decrease of 1,695 AUMs). As of January 1998, 6,476 AUMs in the National Monument were available for grazing use. The total reduction was 8,171 AUMs, equal to the forage required by 681 cattle yearlong. Considered on a county-wide basis, this reduction affected less than 3.5 percent of the total cattle grazed in Cibola County.

ALTERNATIVE B--RESOURCE USE

Recreation & Facilities

Under Alternative B, actions proposed to resolve the issues listed below would have no impacts on recreation or facility development, or the magnitude of the impacts would be negligible. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

In general, opportunities would be more developed and better defined for those recreationists who enjoyed concentrated recreation (i.e., at specific, designated locations). Opportunities for visitors to experience solitude would remain as at present. Developed camping and picnicking opportunities would increase, as would hiking opportunities on up to 25 trails. Opportunities for horseback riding would remain similar to those at present, but access for horses would increase. Hunting opportunities would remain the same. Mountain biking opportunities would increase. Driving for pleasure and back-country driving opportunities would decrease slightly because an increase would occur in semi-primitive nonmotorized acreage. Numbers of back-country byway users could increase as the areas were improved and marketed. Visitors interested in cultural and/or historical properties would find up to 14 different opportunities for exploration. Watchable wildlife opportunities would be more clearly marked.

Issue 2--Facility Development

The facilities called for under Alternative B would directly affect how visitors perceived the recreational opportunities in the Planning Area. Some visitors would like the increased facility development and see it as improving the opportunities for recreation. Other visitors would have the opposite viewpoint. Many opportunities for dispersed recreation would still exist because only 58 acres (less than 1 percent of the Planning Area) would be disturbed directly by recreational developments. Developed facilities for camping would likely draw more recreation users. The development of hiking trails would increase opportunities, from the approximately 36 miles under the No Action Alternative up to nearly 77 miles under Alternative B. Trailhead facilities would increase the opportunities for hikers, horseback riders, and mountain bike riders to enjoy the variety of trails or old roads available.

Opportunities for picnicking at developed areas would increase by 150 percent, as would those for driving into the back country for pleasure (with the designation of three additional back country byways). Under Alternative B, visitors with an interest in cultural or historical properties would find increased opportunities for learning about the past. More wildlife enthusiasts might be drawn to the Planning Area because opportunities for watchable wildlife would be identified. Entry identification signs would also likely increase the levels of recreation in the Planning Area.

Interpretation and public education would [illegible] recreation and facilities by marketing the Planning Area and NCA through brochures, signs, kiosks and programs at the amphitheater, possibly increasing the numbers of recreationists who came to the area. Interpretation could assist in dispersing visitor use and changing visitor behavior so the impacts of many recreationists would not negatively impact the resources. In some cases, interpretation would help to influence public land users to be good land stewards.

Issue 3--Access & Transportation

Visitors would have access to recreational opportunities on 337.5 miles of road designated as open. This would decrease opportunities for recreationists who were interested in driving for pleasure or back-country driving. Signs and other interpretive information would clarify for visitors which roads were accessible and useable. Closing 5 percent of the Planning Area's roads to vehicle use (in addition to the roads closed by wilderness legislation) would decrease visitor access slightly. Access management under Alternative B would also increase the solitude for those wishing to participate in activities such as backpack camping, hiking, horseback riding and hunting because less acreage would be disturbed by vehicle intrusions.

Issue 5--Wilderness Suitability

Not recommending the Chain of Craters WSA as suitable for wilderness designation would open it to recreational developments and increase opportunities for visitors interested in such developments. Driving for pleasure, hiking, and mountain biking opportunities would not be limited by a wilderness designation in this unit. Those recreationists who desired wilderness experiences would have more than 100,000 acres of Planning Area wilderness. Under Alternative B, the BLM would also recommend a net 3,490-acre addition to the Cebolla Wilderness, increasing the wilderness recreational opportunities to 105,290 acres.

Issue 7--Cultural Resources

Under Alternative B, the BLM would allocate up to 14 sites for public use, providing an increase in sightseeing opportunities for visitors interested in cultural or historical properties. Scientific investigations could occur at these sites and/or others, also increasing recreational opportunities. Stabilization and erosion-control projects would increase the likelihood that visitors would have opportunities to see historical and/or cultural properties in the future. Some recreationists would be attracted to sites with antiquities signs, while others would dislike this visual intrusion.

Issue 8--Wildlife Habitat

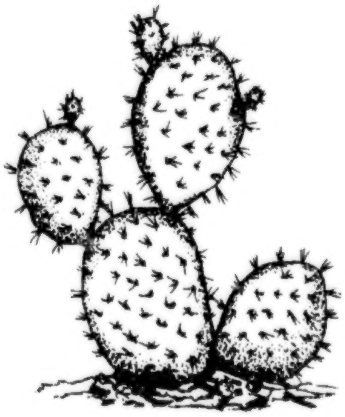
Increasing the quality and quantity of wildlife habitats would increase the opportunities for recreation. Working with state and federal agencies to reintroduce native wildlife and/or plant species would also increase viewing potential.

Issue 9--Vegetation

Under Alternative B, the BLM would increase the acreage of prescribed fires, decreasing the recreational opportunities for the short term (during the burn period and rehabilitation). (The impact would be greater than under the No Action Alternative, because more acreage would be burned.) Other actions to change the vegetative environment would likewise produce short-term impacts to recreation by restricting use to protect health and safety. Immediately after any treatment, some scenic disturbance would be noticeable by visitors and users. In the long term, recreationists would see increased vegetative diversity throughout the Planning Area. Long term improvements in vegetative health would increase recreational opportunities.

Issue 10--Boundary & Land Ownership Adjustments

If the Congress followed the BLM's recommendations for boundary changes, the total land acreage in the NCA (including non-public land) would increase by 9 percent to 288,300 acres, and in wilderness by 3.4 percent to 105,290 acres. This larger area would provide increased recreational potential.



Access & Transportation

Under Alternative B, actions to resolve the issues listed below would have negligible impacts on access and transportation. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Motorized access opportunities would be available on 143,560 acres through the use of 337.5 miles of designated travel routes. For those who preferred areas away from such use, 104,450 acres of public land would be available.

Access by up to 25 trails would be enhanced for those who preferred such use, although many of these trails would have specific cultural sites as their destination point. Users would also benefit from the construction of trailhead facilities, including some for horseback use and mountain biking. Trails designated for mountain bike use would enhance this experience and reduce conflicts among users.

Issue 2--Facility Development

Providing parking areas and improving existing motor vehicle access to the new campground in the Spur Unit and the trailhead for the Dittert Site would improve access to services and features in the Planning Area, as would parking facilities and trails to about 14 cultural and historical sites. Facilities to accommodate horseback use at the Armijo Canyon, Narrows, Hole-in-the-Wall, and Cerro Brillante CDNST trailheads would also improve access.

Issue 3--Access & Transportation

Motorized access opportunities would be diminished by increasing the amount of land closed to motor vehicle access (about 104,450 acres). Cross-country travel by motor vehicle would be lost on 12,000 acres as a result of the BLM restricting travel to designated routes.

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Issue 4--Wilderness Management

An additional 3,650 acres would be closed to motor vehicle use through expansion of the Cebolla Wilderness.

Issue 5--Wilderness Suitability

If the Chain of Craters WSA was not designated as wilderness and was released from further wilderness review, motorized access opportunities would continue but be diminished through limiting use to designated travel routes. Closure of 2.3 miles of travel routes, or 5 percent of those inventoried within the WSA, would also decrease access.

Of the lands contiguous to Cebolla Wilderness, 3,650 acres recommended for wilderness would eventually be closed to motorized and mechanical forms of transport, if the Congress designated them. Pending Congressional designation, motor vehicle access would be limited to designated routes. The BLM would manage the remaining contiguous lands under the vehicle designation of "limited." Motor vehicle use would be restricted to designated travel routes.

Issue 7--Cultural Resources

Development of parking and trails at additional cultural sites would enhance visitor access opportunities there.

Issue 9--Vegetation

For user and visitor safety, access would be prohibited for short periods of time when prescribed fires were conducted.

Summary

The direct impacts of actions taken under Alternative B on access opportunities would depend on the user's preferred or required method of travel. For those who preferred nonmotorized methods of travel, the entire Planning Area would be available. However, nonmotorized access opportunities would be enhanced on 42 percent of the Planning Area as a result of wilderness designation, because motorized vehicles and mechanical forms of transport would be prohibited. For people who preferred or were limited to motorized or mechanical means of transport, access on 337.5 miles of BLM-administered, designated travel routes would be provided to 58 percent of the public lands in the Planning Area.

An increase in BLM-provided campgrounds, parking lots, trailheads and trails would enhance the opportunity to access public lands and features within the Planning Area. However, certain areas of public lands could be closed for a few days for vegetative treatments or the practice of traditional American Indian activities.

Wilderness Management

Under Alternative B it is assumed that an additional 3,650 acres of public land in the Planning Area suitable for wilderness would be designated by the Congress.

Actions proposed to resolve the issue listed below would have negligible impacts on wilderness management. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management

Issue 1--Recreation

The additional 3,650 acres of public land in wilderness would benefit visitors who wished to experience this type of setting for primitive and unconfined recreational use.

Issue 2--Facility Development

Additional trailhead facilities located adjacent to the two wildernesses would improve accessibility and encourage use by providing a convenient place for visitors to begin their trip. The existence of several trailhead facilities to access wilderness would improve the opportunity for users to be dispersed, decreasing the potential for encountering other users and maintaining opportunities for solitude.

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Issue 3--Access & Transportation

Approximately 6 miles of authorized access routes in the Cebolla Wilderness and 18 miles in West Malpais would continue to serve livestock permittees and owners of private inholdings. Access for development of non-federal mineral interests would be dealt with on a case-by-case basis. No undue or unnecessary impacts would be anticipated from mineral development.

Issue 5--Wilderness Suitability

The manageability and recreational use of the Cebolla Wilderness would benefit from the designation of an additional 3,650 acres of suitable public land.

Issue 6--American Indian Uses & Traditional Cultural Practices

Closure of lands for privacy in conducting traditional practices would displace the primitive recreational use of that area during the closure period (expected to be no more than a few days per year). Infrequent use of a motor vehicle (i.e., once every 2 to 3 years, for no more than a day) by American Indians whose mobility depended on such use to carry out traditional cultural practices would be considered non-impairing and the "minimum tool." Consultation between the BLM and American Indians would be needed before formal closure and authorized use of a motorized vehicle.

Issue 7--Cultural Resources

Should new stabilization or erosion-control projects be needed because of the threat of losing cultural resources of high value, they would be accomplished using the "minimum tool."

Issue 8--Wildlife Habitat

The use of motor vehicles and motorized equipment to maintain existing wildlife projects would be restricted. Any noise and view of vehicles in wilderness would have a negative impact on the user's experience.

Construction of wildlife facilities would be inconsistent with the free operation of natural processes, but could be needed for the continued existence or welfare of wildlife living in the wilderness. With consideration of their design, placement, duration, and use, certain permanent installations would be permitted to maintain conditions for wildlife. These would be allowed only if the resulting change was compatible with the preservation of wilderness character and the installation was the "minimum tool" needed.

Issue 9--Vegetation

The development of AMPs/CRMPs and the management of livestock to improve forage conditions would benefit wilderness through enhancing its natural character.

Actions to suppress wildland fires in wilderness could alter the natural landscape and disrupt the opportunities for solitude and primitive recreation. The severity of impacts is not measurable, but suppression actions would be done to minimize surface disturbance and disruption of wilderness resources and uses. In the long term, any short-term disturbance from fires could benefit vegetation through improved plant diversity and the return of natural ecological processes.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of non-federal surface (800 acres) and subsurface mineral interests within the boundary of the two wildernesses would enhance wilderness management and values through eliminating detrimental development. Excluding approximately 200 acres of land on the Cebolla Wilderness perimeter owned by the Acoma Pueblo would enhance wilderness management by excluding non-federal lands.

Summary

Under Alternative B, the wilderness resource would benefit from the addition of 3,650 acres of public land designated by the Congress. Designation would benefit opportunities for primitive and unconfined recreation by increasing the amount of public land in the Planning Area available for this type of use to 42 percent. Acquisition of private surface and subsurface inholdings would benefit the manageability of these areas, eliminating the need to provide

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access and the potential for activities that would degrade the area's naturalness.

Wilderness Suitability

It is assumed that the Congress would accept the BLM's recommendation and release the entire 18,300 acres within the Chain of Craters WSA from further wilderness review. It is also assumed that the Congress would designate 3,650 acres contiguous to the Cebolla Wilderness. The 6,730 acres of public land found to be unsuitable would be released from interim management (by the BLM State Director under Section 202 of FLPMA, 30 days after the decision record is issued for this El Malpais Plan).

Under Alternative B, actions proposed to resolve the issues listed below would have negligible impacts on wilderness suitability. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 2--Facility Development
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Through continued use of travel routes and vehicle noise, motorized recreational use of the Chain of Craters WSA would impair the naturalness, opportunities for solitude and primitive and unconfined types of recreation.

Issue 3--Access & Transportation

Use of 44.2 miles of vehicle routes in the Chain of Craters WSA by motorized equipment and vehicles would have a negative influence on the opportunities to experience solitude and maintain a natural environment. To prevent resource damage and deterioration of these designated routes, periodic maintenance would be required, which would impact the naturalness of the area and disqualify it as roadless.

Issue 9--Vegetation

The installation of any new range improvements for livestock management would adversely impact wilderness values if frequent motorized access was required. If done by mechanical means, vegetative treatments and periodic maintenance would also impact wilderness values, especially naturalness.

American Indian Uses & Traditional Cultural Practices

Under Alternative B, actions proposed to resolve the issues would have the following impacts on the uses and traditional cultural practices of American Indians in the Planning Area.

Issue 1--Recreation

As discussed under Alternative A above, dispersed recreation would continue to increase over the life of the plan. Under Alternative B, such use would likely increase more because recreation would be encouraged. Dispersed recreation would conflict with traditional American Indian uses if visitors intruded into these activities or took items left as offerings. In particular, horseback riding, mountain biking and picnicking could conflict with American Indian uses. Under Alternative B the probability of such incidents would continue to increase.

The Ramah Navajos have identified the Chain of Craters, including portions of the CDNST, as sensitive. No specific conflicts with other recreational locations emphasized under Alternative B would be expected. However, lava tubes, mountain peaks, archeological sites, and springs are sometimes important in American Indian traditional belief and practices.

Issue 2--Facility Development

No conflicts from establishment of recreational facilities would be expected with traditional American Indian uses in the Spur Unit, nor from the construction of five major trailheads at Cerro Brillante, Cerro Americano, The Narrows, West Malpais, and Armijo Canyon. Primitive trailheads would provide access to the Pinole Site, the Cebolla Canyon Community (including The Citadel), Lobo Canyon Petroglyphs, Aldridge Petroglyphs, Stone House, West

Malpais Schoolhouse (from the Cerro Brillante Trailhead), and other properties (refer to Table 2-9). These facilities would concentrate recreational use, resulting in increased visitation nearby. Although no specific conflicts with American Indian uses are known, archeological sites, mountain peaks, and springs are often important to Indian people.

A total of 40.5 miles of new trails (from the trailheads discussed above) and 19 miles of closed roads would be available for hiking and horseback riding. Construction of specific routes would be preceded by site-specific EAs, and closely coordinated with American Indian groups who have close ties to El Malpais. Routes could be designed to direct recreational users away from sensitive locations.

Most routes outside wilderness could also be used for mountain biking. If such use began to result in environmental damage, specific bike trails would be established in the Chain of Craters, Cerritos de Jaspe, and Brazo Units. Of these, the Chain of Craters has been identified as sensitive by the Ramah Navajos.

Issue 3--Access & Transportation

It is common for vehicles to be driven off established roads during piñon gathering and other traditional activities. Under Alternative B, no off-road vehicle use would be allowed, all vehicle use generally would be prohibited in wilderness, and vehicle use would be limited to designated roads and trails on 144,000 acres of the Planning Area. About 19 miles of existing roads and trails would be closed under this alternative, with the remaining 337.5 miles remaining open. Limitation of vehicle use to existing roads and trails would increase privacy but decrease accessibility.

Most of the roads to be closed are short segments that duplicate existing access. The closures would affect areas to the east of Cerro Negro, where some areas currently accessible by vehicle would be a mile or so from an open road. The closure would also affect access to Navajo Cave, an ice cave in the National Monument that would no longer be accessible from the east (Cerritos de Jaspe area). Neither of these locations are known to be important in traditional American Indian practice, so these closures would have no effect.

Issue 4--Wilderness Management

Under the Resource Use Alternative, American Indians would be allowed to access specific places within the Cebolla and West Malpais Wildernesses by vehicle under certain circumstances. It would have to be shown that, because of the physical condition of mandatory participants or other factors, vehicle use would be the "minimum tool" required for access. Other factors such as frequency and duration of visits would have to be taken into account to ensure that vehicular use would not result in degradation of wilderness qualities.

Issue 5--Wilderness Suitability

Release of the Chain of Craters from WSA status would facilitate access for American Indians by allowing continued vehicle use along designated roads and trails. Addition of 3,650 acres to the Cebolla Wilderness would limit vehicle use there, and increase the amount of walking needed for activities such as gathering piñon nuts.

Issue 7--Cultural Resources

Under Alternative B, applications for five to eight scientific investigations involving collection or excavation at prehistoric sites would be expected. This is a higher level of activity than would be anticipated under any other alternative. The Pueblo of Acoma recognizes all prehistoric sites in the Planning Area as ancestral places, and in their traditional belief considers that any excavation or collection would have a negative effect. By law the BLM is required to consult with American Indians before undertaking such a project, but is not absolutely bound to conform to their wishes. If permits for these activities were granted, adverse impacts to traditional practices would result.

Some traditional American Indian people also regard active management of prehistoric archeological sites as intrusive. Under Alternative B, the BLM would undertake 7,745 acres of cultural resource inventory, post 200 antiquities signs, maintain stabilization projects at three prehistoric sites, undertake erosion control measures at up to 25 other sites, and consider additional stabilization of prehistoric ruins. Some or all of these actions could constitute an adverse effect under traditional belief.

Provisions would be made for permitting collection of prehistoric pottery shards for use in traditional ceramic manufacture. This would allow members of Acoma Pueblo to maintain this connection with their ancestral past. However, the permitting process itself would be considered intrusive, so it would be likely that this activity would decrease under Alternative B.

Issue 8--Wildlife Habitat & 9--Vegetation

Prescribed fires and wildland fires under prescription would increase long-term vegetative diversity, but the effect of this activity on specific plants used by American Indians in El Malpais is not known. Chemical treatments of noxious weeds would be of concern to American Indians gathering wild plants, and so would have to be closely coordinated with any group using the area for this purpose. Springs are sometimes important places in traditional American Indian belief, so special attention would be given to American Indian consultations when springs were fenced to improve riparian areas.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of the CDNST treadway would increase recreational use around the Chain of Craters, which is a sensitive area for the Ramah Navajos. Addition of 3,650 acres to the Cebolla Wilderness would restrict vehicle use there, including for traditional practices.

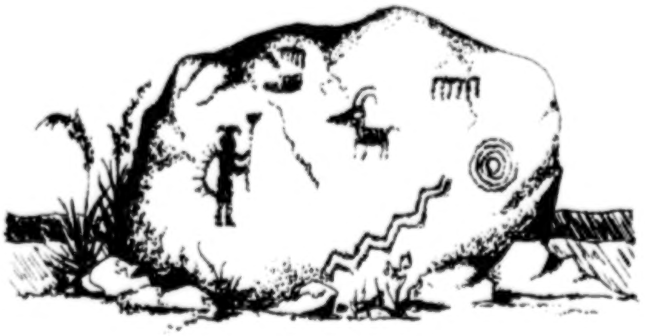
Summary

As under any alternative, increasing recreational use would be one of the most serious and pervasive impacts on traditional American Indian practices in the Planning Area. It would create long-term negative impacts by reducing privacy for traditional activities and increasing the likelihood of non-Indian intrusions into them. Dispersed recreational use would probably increase more rapidly under this alternative than under the other alternatives, because more recreational emphasis is proposed (e.g., increased interpretation, maintenance and signing of the Chain of Craters Back Country Byway, and development of recreational facilities--refer to Map 11). More recreational facilities are proposed under Alternative B than exist under Alternative A (Existing Management) or are proposed under Alternatives C or D. Several proposed facilities would accommodate increased use in the Chain of Craters WSA, which has been identified as sensitive.

More vehicle access would be allowed under Alternative B than under any other except Alternative A. This would increase the ease of access for traditional activities, but reduce privacy. Vehicular access into wilderness for traditional American Indian practices generally would not be allowed.

Some activities and decisions proposed under Alternative B could have other negative impacts. Archeological research involving excavation, signing, ruin stabilization, and erosion control intended to protect ruins could be considered intrusive by some traditional people. Collection of prehistoric pottery for use as temper would be allowed, but only through a formal permitting process. Chemical treatment to alter the Planning Area's vegetative communities could adversely affect people who were gathering herbs and other plant products. Thinning of piñon-juniper stands would be allowed under this alternative, so fuelwood may be available in some years, although available quantities may be insufficient to meet demand. Depending on availability of alternative sources, prohibitions on fuelwood gathering outside the thinned areas may also be an adverse effect.

Certain Acoma Tribal lands (960 acres) are recommended for exclusion from the Planning Area under this alternative. If the Congress and the BLM



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added other lands to the Planning Area through acquisition and expansion, the positive and negative impacts outlined above would apply to those lands. Some ongoing uses such as fuelwood and piñon nut gathering would become more restricted, but the prohibition of incompatible uses such as commercial fuelwood sales and mineral extraction would have a positive impact on American Indian uses.

Cultural Resources

Under Alternative B, actions proposed to resolve the issue listed below would have no impacts on cultural resources. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

Proposals that resulted in increased visitation would result in more unauthorized surface collection and casual excavation of prehistoric sites, although the extent of these impacts cannot be quantified. Impacts from recreational use that was concentrated in defined areas or corridors would be more easily mitigated and controlled, but impacts from dispersed use to cultural resources would be more difficult to counter.

This alternative generally would allow dispersed recreation, but would emphasize development of facilities that could result in more concentrated use at certain locations. These facilities include a developed campground and an additional 40.5 miles of hiking trail. If these areas were surveyed, with their cultural resources documented and avoided, designation of specific camping areas and hiking trails could be beneficial. Adverse effects that could result from more dispersed use could be partly mitigated by public education, as well as archeological survey and documentation.

Under Alternative B, the BLM would encourage public visitation at numerous cultural sites in the Planning Area. Documentation would be sufficient to protect scientific values at the Dittert Site and at most of the five homesteads to be emphasized, although the physical structures at all of these sites would require increased maintenance under this alternative. Additional documentation and increased maintenance would be needed at the two historical schoolhouse sites. Systematic documentation would be needed at the Aldridge Petroglyphs and the Lobo Canyon Petroglyphs, with both documentation and data recovery at the Pinole Site and The Citadel. Data recovery through systematic collection of surface materials would be needed at the Ranger Station Reservoir and Cebolla Canyon Community. Similar measures would probably be required at 10 additional sites if this alternative was selected.

Numerous undocumented archeological sites near the Aldridge Petroglyphs would be subject to secondary impacts such as surface collection if public visitation increased. Other recreational activities would have little impact on cultural resources, including horseback riding, mountain biking, sightseeing, pleasure driving, and wildlife viewing. Similarly, proposed VRM-related actions would not affect cultural resources.

Issue 2--Facility Development

Under Alternative B, the BLM would develop a number of hiking trails and other facilities that would encourage use of the western portion of the Planning Area, which is characterized by very low archeological site densities. These facilities would benefit cultural resources by drawing public use away from more sensitive areas.

Development of an additional 40.5 miles of hiking and mountain biking trails would focus visitation onto particular routes that could be modified to avoid important cultural resources. Similarly, construction of picnic areas would focus use and reduce the impacts that would occur with dispersed use. Construction of kiosks and horseback trailheads easily could be planned to avoid impacts to cultural resources. However, if the presence of trailheads encouraged dispersed use, increased adverse impacts to cultural resources such as illegal surface collection and pedestrian trampling could result.

Building a campground and amphitheater with associated facilities in the Spur Unit would require careful choice of location. This is a sensitive area, and construction here could expose important and currently poorly documented cultural resources to impacts from illegal surface collection, vandalism, and human trampling. In addition to the Class III surveys required for this project, before construction a reconnaissance survey should attempt to locate all structural sites that would be likely to receive increased day use. Baseline condition information should be established for these sites, and if any noticeable change in their condition occurred as a result of increased visitation, appropriate mitigating measures would be taken. Possible mitigation could include data recovery, redirection of public use through signing and establishment of trails, and formal closure of sensitive areas to public entry.

Issue 3--Access & Transportation

Under Alternative B, no off-road vehicle use would be allowed. This prohibition would benefit cultural resources because unrestricted, off-road vehicle use could result in direct damage (as vehicles ran over archeological sites), and could also lead to erosion that would cause damage.

Outside wilderness, approximately 19 miles of existing roads and trails would be closed, with the remaining 337.5 miles remaining open. With the possible exception of two short segments in the Spur Unit, none of the closures would affect areas of sensitive cultural resources.

Issue 4--Wilderness Management

Impacts to cultural resources under Alternative B would generally be the same as those described above for Alternative A. Extractive activities such as artifact collection and excavation would be allowed to cause short-term impacts to visual, vegetative and other natural resources, but only if long-term impacts could be mitigated.

Issue 5--Wilderness Suitability

Few cultural resources are thought to exist in the Chain of Craters WSA, so little practical impact would be anticipated if the area was released from wilderness review. If the Congress acted on the BLM's recommendation to add 3,650 acres to the Cebolla Wilderness, the impacts discussed above under Issue 4 would apply to the cultural resources there.

Issue 7--Cultural Resources

This alternative would emphasize the use and active management of cultural resources. Provisions that would directly benefit cultural resources include increased inventory requirements and an aggressive, proactive inventory program, increased current scientific information, posting of 200 antiquities signs, acquisition of access and consolidation of ownership, monitoring, stabilization, erosion control and fire suppression. The addition of the Breaks Non-NCA Unit, if implemented by the Congress, would bring hundreds of sites under more active management.

Scientific investigations, which actively would be encouraged under Alternative B, would provide current scientific information, but in some cases, would destroy portions of the affected sites, leaving them unavailable for research using future technologies and approaches. This would be a negative long-term impact to particular properties, but at the levels anticipated under this alternative (probably no more than eight projects), would not affect the long-term scientific potential of the Planning Area as a whole.

Under Alternative B, provisions would be made to allow collection of prehistoric pottery for use as temper in the manufacture of contemporary pottery. This collection would be preceded by systematic archeological documentation, but it is likely that some information would be lost.

Interpretation would increase public awareness and appreciation of cultural resources, but would inevitably result in loss of surface artifacts at the Dittert Site, Ranger Station Reservoir, Pinole Site, The Citadel, and Cebolla Canyon Community. Sufficient documentation exists for surface artifacts at the Dittert Site and Cebolla Canyon Community, but without mitigation, active onsite interpretation at the other three sites would have long-term adverse impacts on their scientific values.

Issue 8--Wildlife Habitat

Prairie dog enhancement is proposed for an area at the mouth of Cebolla Canyon near the Cebolla Canyon Community. It is expected that the animals would remain in areas with fine, valley-bottom sediments, away from the prehistoric resources. However, the animals' location should be monitored, and if they encroached into the area of prehistoric ruins, appropriate corrective measures would be taken.

Issue 9--Vegetation

Piñon-juniper thinning would result in concentrated human use, increased likelihood of surface collection, and surface disturbance through vehicle traffic and dragging of wood during loading. Therefore, Class III cultural resources inventory and avoidance of vulnerable cultural resources would be required before thinning began.

Erosion affecting cultural resources would undoubtedly continue, but would be reduced by improved grazing management under the Resource Use Alternative. Eight historical homesteads in the Planning Area have been fenced to exclude livestock, and this alternative would provide for additional fencing if warranted.

Range improvements, spring developments, and watershed structures proposed under Alternative B would be subject to environmental assessment, and their potential adverse effects mitigated through avoidance or data recovery. Similarly, chemical, mechanical, and biological vegetative treatments under this alternative would be of small scale and would be evaluated on a case-by-case basis through separate EAs.

Prescribed fires and wildland fires under prescription could destroy historical sites with flammable elements, and damage the scientific potential of surface and near-surface archeological materials. Activities associated with fire suppression such as establishment of fire camps and construction of fire lines could also result in adverse impacts to cultural resources. Under Alternative B, 8 to 12 historical sites have been identified as high-priority fire suppression zones, and other newly discovered sites could be added to this list. Reconnaissance-level surveys looking for sites with flammable materials would be conducted in areas where prescribed fires were proposed. These areas would not generally be inventoried to Class III standards if they had low site density (refer to Map 37). Class III inventory would be considered in zones of high site density, and a cultural resource advisor would be required during fire suppression activities, regardless of the source of ignition.

Issue 10--Boundary & Land Ownership Adjustments

Expansion of the NCA to include the Breaks Non-NCA Unit would add numerous significant Anasazi ruins to the NCA, providing them with a higher level of protection and more intensive management. (Such expansion would require that the Congress amend the NCA boundary through legislation.)

The easements and acquisition of inholdings proposed under Alternative B would also benefit BLM efforts to manage cultural resources by improving access and consolidating ownership. However, under this alternative, the non-NCA lands would remain subject to mineral entry, increasing the possibility of inadvertent damage to cultural resources.

Changes in the Cebolla Wilderness boundary would bring an additional 3,650 acres into wilderness, with the effects discussed under Issue 4 above. Realignment of cherry-stemmed roads in the Cebolla Wilderness would be subject to a site-specific EA and NHPA compliance. If cultural resources were likely to be affected by this activity, appropriate avoidance or other mitigating measures would be adopted.

Summary

NCA designation and the provisions of this plan would protect cultural resources from damage as a result of deliberate, planned actions. However, natural and human factors would continue to degrade these resources. Natural deterioration would affect historical homesteads, while gully and sheet erosion would affect archeological sites. Both archeological and historical sites would continue to be vulnerable to illegal collection, looting, and vandalism. Illegal surface collection would continue to be primarily an unintended effect of recreational use, which would especially be encouraged under Alternative B. This impact would be partly mitigated by positive interpretive messages and building recreational developments in non-sensitive areas. Documentation of archeological sites before they have been seriously affected by surface collection would also partly offset the adverse effect of recreation.

Restriction of vehicle use to existing roads and trails throughout the Planning Area would help pro-

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tect cultural resources. Cultural resource stabilization, erosion control, patrol and monitoring would be most extensive under Alternative B (although still restricted in wilderness). Archeological research that involved collection and/or excavation would be actively encouraged, which would increase current knowledge at the expense of future research potential.

Wildlife Habitat

Under Alternative B, actions proposed to resolve the issues listed below would have no impacts on wildlife habitat, or the magnitude of the impacts would be negligible. Impacts from resolving the remaining issues are discussed in the paragraph following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources

Issue 1--Recreation

Five trails (at the Ranger Station Reservoir, The Narrows, La Ventana Natural Arch, Hole-in-the-Wall, and along the Continental Divide) would be emphasized as the primary areas for hiking activities under this alternative. The impacts of use on these five trails would be that same as those identified under Alternative A. Under Alternative B, the increased emphasis on developed recreational opportunities (e.g., hiking, camping, interpretive tours, horseback riding, mountain biking) would result in additional impacts to wildlife and/or their habitats over those described for Alternative A.

Dispersed camping, hiking, picnicking, horseback riding, and mountain biking outside established recreation sites and trails would be temporary activities that occurred infrequently in any one area. These activities would create short-term impacts that could disturb wildlife species in the immediate vicinity of the activity (e.g., birds flushed from trees, rabbits from bushes), but would not be anticipated to cause any long-term impacts. It is estimated that wildlife would be disturbed on 1,280 acres per year from these activities.

Interpretive programs and activities (e.g., hikes, walks, Ranger talks and tours) would generally be concentrated in high-use recreation/camping sites and at specific homesteads and archeological sites. The anticipated impacts would include crushing of approximately 4 acres of vegetative wildlife habitat from foot traffic (¼ acre per site at 14 sites) and a wildlife disturbance zone of approximately 560 acres (40 acres per site) within the immediate vicinity of the activities.

Issue 2--Facility Development

Expanding recreational facilities more than under Alternative A (a campground, 20 trails, 13 trailheads) would result in a direct loss of an additional 32 acres of wildlife habitat from development, and a broader area of wildlife disturbance of 6,400 acres from human use of the area (refer to Table 4-1). Development of a campground in the Spur Unit would directly destroy 10 acres of wildlife habitat and create a disturbance area of approximately 640 acres. The 20 trails would average about 2 miles each in length. The anticipated impacts would include disturbance of approximately 13 acres of habitat from foot traffic (⅓ acre per mile) and a wildlife disturbance zone of approximately 3,200 acres (80 acres per mile) within the immediate vicinity of the trails.

Trailheads and limited parking (for 4 to 6 vehicles each) would be developed for 11 sites, causing direct habitat loss of approximately 3 acres (¼ acre each) and a zone of disturbance on 1,920 acres (160 acres each). Four additional trailheads would be developed, with parking for 10 vehicles each at two sites, 20 vehicles at one site, and 25 vehicles at one site. The direct loss of approximately 4 acres for parking and a 640-acre zone of disturbance would occur from the establishment and use of these trailheads and parking.

In addition to the treadway for the CDNST, the BLM would build two primitive trailheads near Cerro Americano and Cerro Brillante, with graded parking for 30 vehicles at each location. These trailhead parking areas would cause a long-term loss of 3 acre of habitat (approximately 1½ acres for each site). Wildlife disturbance would occur over approximately 320 acres (160 acres for each site) near the trailheads.

The designation of three new back country byways and the expansion of the existing one along CR 42 would increase the direct effects to wildlife habitat from vegetation loss and soil disturbance caused by vehicles and other human activities. In addition, increased disturbance (e.g., noise) would be anticipated to occur. Along 337.5 miles of roads available for use under Alternative B, habitat degradation would continue to occur.

New entry signs, watchable wildlife signs, and kiosks would be built for the new and expanded back country byways under Alternative B. The 16 kiosks, which would include pullouts for 4 to 6 vehicles each, would cause a direct loss of approximately ¼ acre each, for a total of 4 acres. The zone of disturbance around these kiosks would be 640 acres totals (40 acres each). A large identification sign built along I-40 would cause habitat loss of about 100 to 200 square feet. Because all these developments would be installed along established roads, however, the direct impacts would be less than if installation was in newly disturbed locations.

Issue 3--Access & Transportation

Under Alternative B, 337.5 miles of roads outside wilderness would be open to motor vehicle use (refer to Table 2-11). Routes within wilderness would remain closed or limited for administrative purposes, and an additional 19 miles of roads outside wilderness would be closed. The lands adjacent to the closed roads would not be subject to vegetation loss and soil disturbance caused by vehicles and other human activities. In addition, these roads would eventually revegetate and provide additional habitat with reduced disturbance to wildlife populations within the area. The wildlife habitat along roads that remained open would continue to be degraded by vehicles and other human activities.

Issue 4--Wilderness Management

The impacts would be the same as those identified under Alternative A.

Issue 5--Wilderness Suitability

As identified in Alternative A, not recommending for designation 6,730 acres of existing and acquired lands contiguous to the Cebolla Wilderness would eliminate any special protections under the Interim Management Policy. However, because this area is recommended to be included within the NCA, appropriate protective measures under P.L. 100-225 are already available to protect and enhance wildlife habitat within the area.

Issue 8--Wildlife Habitat

The acreages identified under Alternative A for direct impacts and zones of disturbance would be the same under Alternative B. The description of water developments, fences, and vegetative manipulations as identified in Appendix P would also be the same.

In addition to maintaining the three existing habitat improvements (described under Alternative A), the BLM would undertake up to seven additional projects per year, for a total of up to 10 annually throughout the Planning Area. These would include four prescribed fires and one wildland fire under prescription (refer to discussion under Issue 9, Vegetation below) and five other projects (three water developments, a prairie dog colony enhancement area, and a riparian fencing development).

The prescribed fires would average approximately 750 acres each in size and the wildland fire 1,000 acres. The water developments (1,500-gallon rainwater catchments) would be installed within the Cerro Brillante Unit (T. 6 N., R. 12 W., Sec. 31, SE¼; 33, NE¼; and 35, NE¼). The long-term loss of habitat would be approximately 1,200 square feet (.02 acre) of grassland. Short-term impacts would include the crushing of vegetation by vehicles and foot traffic during construction, and the disturbance of wildlife (e.g., birds, small mammals, reptiles) within the immediate vicinity of the site.

The prairie dog colony enhancement project would use 1,000 acres total, including the south half of the North Pasture, and the Head Pasture of the El Malpais Allotment (Breaks Unit). Enhancement of the area for prairie dogs would help support two special-status species inhabiting the area (the burrowing owl and mountain plover). If the colony was able to expand to an appropriate size (about 200 acres), this area would also be a potential release site for the black-footed ferret, one of the most endangered mammals on earth.

Prairie dogs prefer areas with short vegetative cover, which allows them to view predators and maintain a complex social system (Fagerstone and

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Ramey 1996). The dogs modify the grasslands in a similar manner as grazing cattle do, by feeding on grasses and clipping unpalatable plants to ground level (*ibid.*). Livestock grazing would be allowed in this area because even intense use of this kind has no negative impact on prairie dog colonies. In fact, Fagerstone and Ramey found that prairie dog burrow densities in the Conata Basin of South Dakota increased twice as fast on sites grazed by cattle as on ungrazed sites. In well-established prairie dog colonies, large areas of bare soil are common (*ibid.*).

This wildlife project could prevent the achievement of the appropriate vegetative community on the North and Head pastures of the El Malpais Allotment. However, for the following reasons, the project would have a minimal impact on achieving the overall vegetative objectives within the Planning Area: (1) this area is at the bottom of the watershed and is essentially flat with very little relief, so the erosion potential is low; (2) these pastures are part of a closed basin with no runoff into other watersheds (again, with low erosion potential); and (3) these pastures, being at the bottom of the watershed, are already disturbed annually by soil deposition from normal runoff.

The BLM would fence 1 to 1½ miles of riparian habitat along Cebolla Canyon. This area is one of the few small perennial streams sections within the Planning Area, and consequently is considered as sensitive wildlife habitat. Approximately 10 acres of habitat within the fence would be excluded from livestock grazing.

dark-eyed junco

In addition to those projects already identified under Alternative B, the BLM would propose new wildlife projects to maintain and/or enhance existing habitats. These would disturb approximately ½ acre per project (3 acres per year), for a total of 60 acres over the 20-year life of this plan (refer to Table 4-1).

Issue 9--Vegetation

The general description of vegetative manipulations to accomplish vegetative objectives, which would create both beneficial and negative impacts to wildlife and their habitats, are identified under Alternative A.

Under Alternative B, an increased emphasis would be placed on vegetative treatments with the use of livestock grazing management practices, forest and woodland practices, prescribed fires and wildland fires under prescription, and structures (e.g., fences). Additional benefits, both short- and long-term, would be anticipated over those that would occur under Alternative A.

Piñon-juniper thinning would be emphasized under Alternative B, with approximately 100 acres to be conducted annually to meet vegetative objectives. This would cause short-term disturbances to wildlife habitat, but would have long-term benefits by opening up the closed piñon-juniper canopy and thus increasing vegetative diversity.

Prescribed and wildland fires would be used to accomplish vegetative objectives for forests, woodlands, and shrub-grasslands. Up to five prescribed and wildland fires ranging in size from 50 to 1,500 acres each could be expected each year under Alternative B (averaging about 750 acres each for prescribed fires and 1,000 acres each for wildland fires under prescription). These would be the same fires identified under Wildlife Habitat above.

Riparian management would be implemented using both exclosures and grazing management practices, although grazing practices would be the preferred option to accomplish properly functioning condition. No planting of riparian species or removal of exotic species would be undertaken under Alternative B.

Issue 10--Boundary & Land Ownership Adjustments

As identified under Alternative A, acquiring lands by consolidating private inholdings into BLM administration would benefit wildlife through improved manageability, especially if the acquired lands contained sensitive habitats. Under Alternative B, additional lands not identified in the Land Protection Plan would be acquired if owners were willing to sell.

Summary

Under Alternative B, activities associated with recreation, interpretation, and facility development would result in long-term destruction of 61 acres of wildlife habitat. Near areas with high human use levels or developed facilities, an additional disturbance zone of 14,080 acres would exist. Dispersed activities (e.g., hiking, sightseeing, guided tours) would generally create intermittent impacts of a few hours or days to wildlife. Wilderness and WSA protective measures would generally provide short- and long-term benefits to wildlife and their habitats. Wildlife facilities on 3 acres and vegetation treatments on 3,100 acres annually (e.g., prescribed fires, woodland thinning) would create short-term, site-specific impacts, but would result in long-term improvement vegetative and habitat productivity.

Threatened, Endangered & Other Special-Status Species

As discussed under Alternative A, the BLM is in informal consultation with the FWS under Section 7 of the ESA to evaluate the Planning Area. As part of the informal consultation process, a Biological Assessment is being prepared for all T&E and other special-status species. This informal consultation process is anticipated to be completed in early 1999, and will determine if formal consultation on any species or habitat is necessary. Because the BLM is committed to protecting T&E and other special-status plant and animal species, in particular under the ESA and BLM policies, no actions under any of the alternatives would be allowed to adversely affect any of these species.

Vegetation

Under Alternative B, actions proposed to resolve the issues listed below would have the same impacts on accomplishing vegetative objectives as under Alternative A. Impacts of resolving the remaining issue are discussed in the paragraph following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses and Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Achieving the Potential Natural Communities (PNCs) would be the vegetative goal for the Planning Area. A common set of long-term objectives would be established to guide management and use of vegetation. In general, vegetative species diversity would be expected to improve.

Vegetation--Forest & Woodland Resources

Under Alternative B, actions proposed to resolve the issues listed below would have the same impacts on forest and woodland resources as those discussed above for Alternative A. Impacts of resolving the remaining issue are discussed in the paragraph following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Up to 100 acres of piñon-juniper could be thinned each year to meet vegetative objectives. The thinnings would be conducted at lower elevations, where the site potential was open woodlands, savanna or shrub-grassland. During the 20-year life of the plan, a maximum of 2,000 acres could be improved.

Up to 5 fires ranging from 50 to 1,500 acres each in size could burn each year. These would improve the ponderosa pine forest community by reducing competition with piñon-juniper, and exposing soils to allow for ponderosa pine seedling establishment. Fire could also reduce piñon-juniper in the higher elevation woodlands. In the long term, it is expected that competition for light, water and nutrients in the piñon-juniper trees would be reduced, providing healthier, uneven-aged stands of woodlands.

Vegetation--Rangeland Resources

Under Alternative B, actions proposed to resolve the issues listed below would have the same impacts on rangeland resource as those described above for Alternative A. Impacts of resolving the remaining issue are discussed in the paragraph following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

The PNCs would be part of the vegetative objectives incorporated into AMPs/CRMPs. Rest from livestock grazing use would be increased, but management of warm-season grasses would continue to be emphasized. Rangeland improvements would continue to be built to improve patterns of livestock grazing use. During the short term, improvements in vigor, productivity and reproduction would be expected for grass species. With improvement in productivity, grazing periods would be adjusted to increase the frequency and duration of rest. In the long term, cool-season grasses and desirable shrubs would increase. Based on improvements in vegetative vigor, reproduction and rest from livestock grazing, vegetation would be less susceptible to the negative effects of drought.

Social & Economic Conditions

Actions proposed to resolve the issues of recreation, vegetation (grazing), and American Indian uses and traditional cultural practices could potentially have social and/ or economic impacts. However, the differences proposed for resource use and development between alternatives would not create measurably different impacts. Therefore, the impacts for Alternative B would be the same as those described above for Alternative A.

Soil, Water & Air Resources

Under Alternative B, the actions proposed to resolve the issues listed below would have the same impacts on soil, water and air as those described above for Alternative A. Impacts from resolving the remaining issue are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Improvements in the Planning Area's watershed resources would result primarily from woodland thinning, livestock grazing management practices and fire. As a result of the disturbance associated with piñon-juniper thinnings, the soil surface could be exposed to increased wind and water erosion. Selecting treatment sites that were less susceptible to erosion would reduce these short-term impacts. After thinning, roads would be rehabilitated as needed to limit erosion. Within 2 to 3 years after thinning, increased amounts of vegetative understory (i.e., forbs, grasses and shrubs) would be expected, which would reduce the soil erosion potential to less than it was before thinning. In the long term, the layering of vegetation (i.e., forbs, grasses, shrubs and trees) would reduce the likelihood of soil loss through wind and water erosion.

Responses to fire management would be similar to those anticipated for woodland thinning. Short- and long-term improvement in vegetative cover would be expected, especially on those areas selected to burn for resource enhancement. Fire in the areas burned to reduce their fuel load could be hotter, which could lengthen the vegetative recovery period. Burn prescriptions (e.g., wind speed, temperature, humidity) would be followed to help reduce the risk of vegetative damage from fire heat.

Visual Resource Management

Under Alternative B, actions proposed to resolve the issues listed below would have negligible short-term or long-term impacts exceeding the VRM objectives assigned to public lands within the Planning Area. Impacts of resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

For consistency in managing visual resources in the Planning Area, management classes would be assigned to all public lands there. Visual resources on 233,890 acres or 94 percent of the Planning Area would benefit through the assignment of VRM Classes I and II. Management to meet the objectives for these two classes would prevent activities that would create noticeable changes in the elements of form, line, color and texture found in the landscape.

The visual resources on the 14,110 acres of VRM Class III lands would be subject to a greater degree of change from facilities developed for recreational use. However, lands assigned this class usually do not rank as high scenically, so change would not cause highly contrasting impacts there.

Issue 2--Facility Development

Under Alternative B, building a campground in the Spur Unit would disturb approximately 10 acres and cause short-term visual impacts from construction and the placement of structures in the landscape. Through the use of appropriate colors and materials along with the location of the campground, minimal impact on the scenic values of the area would be anticipated. Disturbance to another 33 acres under Alternative B would come from additional hiking trails, parking areas and trailheads. Added to the 17 acres currently disturbed by facilities and hiking trails, a total of 50 acres would be impacted by changes in the visual resources.

Issue 3--Access & Transportation

The reduction in motor vehicle travel routes (through the closure of 19 miles) and the restriction of motor vehicle use to designated routes would enhance visual resources. Confining vehicles to designated routes would reduce the potential for additional losses of vegetation, soil compaction and erosion from vehicle use, thus decreasing visual contrasts. Closed travel routes would be allowed to revegetate, which would also reduce visual contrasts.

Issue 4--Wilderness Management

The assignment of VRM Class I to 104,450 acres of designated wilderness would preserve the visual resources there. The BLM would follow Class I objectives to prevent activities and structures that did not appear natural.

Issue 7--Cultural Resources

Building erosion-control structures at 25 cultural sites would create short-term visual impacts from construction disturbance and placement of the structures. However, materials that would harmonize with the surrounding landscape would be used. The resulting structures would have a low horizontal profile and would be placed in locations where disturbance

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was occurring from erosion. Therefore, no long-term adverse visual impacts would be anticipated. Over the long term, placing small erosion-control structures at these locations would likely enhance the visual quality of the local area as the adverse erosional contrasts were reduced and the areas were restored to resource production.

Issue 8--Wildlife Habitat

Undertaking up to 10 new habitat improvement projects would benefit visual resources over the long term. The construction of three water catchments over the life of the plan would disturb less than ¼ acre in total, which would be located away from areas of concentrated public use.

Issue 9--Vegetation

Woodland and forest treatments would create textural visual contrasts through thinning areas up to 100 acres in size.

Continued use of forage and range improvements for livestock management would remain evident in the landscape. No new improvements that would create surface disturbance would be proposed.

With up to five fires planned annually, short-term impacts on 50 to 1,500 acres per fire would be expected because the burned vegetation would be visible. Over the long term, these areas would rehabilitate, resulting in diversity and plant vigor that would enhance the area's visual resources.

Issue 10--Boundary & Land Ownership Adjustments

The acquisition of non-federal surface and subsurface estate would help preserve their scenic quality because these lands would be managed to minimize the visual contrasts that could occur (e.g., from development).

Summary

Localized visual impacts under Alternative B would come from recreational facility development and vegetative treatments. Activities that could alter the form, line, color and texture of the landscape would generally be allowed on 14,110 acres of public land classified as VRM Class III. Management activities on the 233,890 acres of Class I and II public land in the Planning Area would be restricted to conform to objectives of these classes. VRM Class I, which allow would allow no visual changes, would be assigned to approximately 45 percent or 104,450 acre, including designated wilderness. Acquisition of nonfederal inholdings, both surface and subsurface, would benefit the management of visual resources.

Cumulative Impacts

Under Alternative B, these would be the same as those identified under Alternative A above.

ALTERNATIVE C--NATURAL PROCESSES

Recreation & Facilities

Under Alternative C, actions proposed to resolve the issues listed below would have no impacts on recreation or facility development, or the magnitude of the impacts would be negligible. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat

Issue 1--Recreation

Under Alternative C, the BLM would maximize the opportunities for dispersed recreation while decreasing the opportunities for developed camping, hiking and picnicking. Most interpretation, which would be through printed media and personal contacts, would promote dispersed recreation and inform visitors of opportunities outside the Planning Area. Horseback riding opportunities would be the same as under the No Action Alternative. The quality of hunting opportunities would improve because of the greater levels of isolation.

Issue 2--Facility Development

With limited facilities developed, fewer visitors who depended on such facilities would use the Planning Area for recreational activities. Opportunities for camping, hiking, picnicking, back-country driv-

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ing, exploring cultural or historical sites, and mountain biking would be fewer under this alternative.

Issue 3--Access & Transportation

Closing 133.1 miles of roads in the Planning Area would limit access for such recreational opportunities as driving for pleasure, back-country driving, hunting, hiking and mountain biking. However, more acreage would be in the semi-primitive, nonmotorized ROS class, increasing the opportunities for recreationists interested in a more primitive and dispersed experience.

Issue 4--Wilderness Management

The net increase of 9,180 acres of wilderness would provide additional opportunities for dispersed and primitive recreation. Existing recreational facilities at locations such as The Narrows that provided access into wilderness would be removed, and recreationists would seek opportunities elsewhere.

Issue 5--Wilderness Suitability

The recommendation of the Chain of Craters WSA and contiguous Cebolla Wilderness acreage as suitable for wilderness would decrease the recreational opportunities for those visitors seeking mountain biking, back-country driving and other developed activities. Those visitors seeking primitive and dispersed recreational opportunities would find the additional acreage a benefit. Probably no net change in total visitor use numbers would occur; the change would be in the type of recreational opportunity available.

Issue 7--Cultural Resources

The use allocations for cultural resources made under Alternative C would decrease the number of recreational opportunities for visitors interested in sightseeing at historical and cultural sites. No sites would be available for developed recreation, nor would facilities providing access to cultural resources be developed.

Issue 9--Vegetation

Under Alternative C, the BLM would conduct a similar number of burns as under the No Action Alternative. Therefore the impacts to recreation and facilities would be the same.

Other vegetative manipulations would produce short-term impacts to recreation. During these actions, visitor use in affected areas would be restricted to protect health and safety. Immediately after the treatments, some scenic disturbance would be noticeable to visitors and users. In the long term, recreationists would see an increase in the diversity of the vegetation throughout the Planning Area and improvements in vegetative and wildlife habitat that would enhance the recreational experience.

Issue 10--Boundary & Land Ownership Adjustments

If the Congress followed the BLM's recommendation for the NCA boundary changes proposed, the number of acres in the NCA would increase by 16 percent to 303,400 acres, and in wilderness by 9 percent to 110,980 acres. This acreage increase would improve the recreational potential of the Planning Area.

Access & Transportation

Under Alternative C, actions proposed to resolve the issues listed below would have negligible impacts on access and transportation. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Under Alternative C, with more emphasis on providing opportunities for semi-primitive and primitive recreation, the BLM's need to provide access for motorized vehicles would be reduced. Motorized vehicular use of the Planning Area would be on fewer miles of designated travel routes. The reduced route density would favor those recreationists who preferred nonmotorized activities.

However, concentrated use on fewer routes could lead to conflicts between users. The level of maintenance on many designated routes would be reduced, and the closure, removal or abandonment of routes and trails would make access to the public lands more difficult.

Trail access in the Planning Area would be limited to the five existing trails. Nonmotorized access would be available throughout the area, except on 128,440 acres of wilderness that would be closed to mechanical forms of transport such as mountain bikes.

Issue 2--Facility Development

The ease of accessing public lands would be impacted by removing facilities and providing fewer accommodations at sites. Existing trails would serve as access routes to public lands and features. Markers for the Narrows Rim Trail would be removed, although visitors could hike through this portion of the Planning Area without using the trail to guide them. Facilities to direct visitors to the Dittert Site would be removed.

Issue 3--Access & Transportation

Limiting vehicle use to designated routes and increasing the amount of land closed to motor vehicle access (128,440 acres) would diminish access opportunities. The opportunity to travel cross country by motor vehicle would be lost on 12,000 acres. Designated routes available for public use would be reduced from the existing 354.5 miles to 199.7 miles.

Issue 4--Wilderness Management

An additional 27,640 acres would be closed to access by motor vehicles and other forms of mechanical transport. This would be the result of the Congress expanding the Cebolla Wilderness and designating the Chain of Craters as wilderness.

Issue 5--Wilderness Suitability

If the Chain of Craters WSA was designated as wilderness, motorized and mechanical access opportunities would be lost to the general public on 18,300 acres and 46.5 miles of inventoried travel routes. The area would still be accessible for other forms of access such as hiking and horseback riding.

Of the lands contiguous to the Cebolla Wilderness, 9,340 acres would be recommended for wilderness and closed to motorized and mechanical access if the Congress designated them. The lands found unsuitable for wilderness designation under Alternative C would be managed as "limited," and motor vehicle access there would be restricted to designated travel routes.

Issue 9--Vegetation

Up to three fires ranging in size from 50 to 1,000 acres each would be expected each year. For public safety, access would be discouraged on these lands when a prescribed fire was being conducted. When planning to ignite a fire, the BLM would assess recreational use of the area to minimize travel disruptions.

Summary

The direct impacts of Alternative C on access opportunities would depend on the user's preferred or required method of travel. For those who preferred nonmotorized methods of travel, the entire Planning Area would be available. As the result of wilderness designation on 52 percent of the Planning Area, nonmotorized access opportunities would be enhanced because motorized vehicles and mechanical forms of transport would be prohibited. Access opportunities for people who preferred or were limited to motorized or mechanical means of transport would be provided on 199.7 miles of BLM designated travel routes over 48 percent of the public lands in the Planning Area. Minimal BLM-provided facilities and trails would be available to serve as access points to public lands and features within the Planning Area. Periodically, access to certain areas of public lands temporarily could be closed for a few days because of vegetative treatments such as fire, and for the practice of traditional American Indian activities.

Wilderness Management

Under Alternative C, it is assumed that the Congress would designate an additional 27,640 acres of public lands in the Planning Area as wilderness.

Actions proposed to resolve the issue listed below would have negligible impacts on wilderness. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management

Issue 1--Recreation

The 128,440 acres of public wilderness would benefit visitors who wished to experience this type of setting. Primitive and unconfined recreational use of the areas would be consistent with wilderness preservation. Opportunities for solitude would be maintained and potentially enhanced.

Issue 2--Facility Development

The removal of facilities and reduction in the level of Planning Area development around the perimeter of the two wildernesses would benefit natural wilderness values by making access less convenient. Recreational use of these areas thus would be discouraged, reducing the potential for threats to naturalness from human imprints associated with such use.

Issue 3--Access & Transportation

Through agreements with the BLM, owners of non-federal surface and subsurface interests, and livestock permittees with range improvement facilities within the boundaries of the two wildernesses would be provided with reasonable access. These routes would be the least impacting to the wilderness setting. For access to range improvements, other routes would have to be authorized in the Chain of Craters and the expanded Cebolla Wilderness through the use of RIM Plans. Access for developing non-federal minerals would be dealt with on a case-by-case basis. No undue or unnecessary impacts would be anticipated from such development.

Issue 5--Wilderness Suitability

Under Alternative C, the 18,300 acres of public land contained in the Chain of Craters WSA and 9,340 acres contiguous to the Cebolla Wilderness would be preserved by Congressional designation as wilderness. The manageability and recreational use of the Cebolla Wilderness would benefit from the designation of the contiguous public lands.

Issue 6--American Indian Uses & Traditional Cultural Practices

Closure of lands for privacy when religious ceremonies were being conducted by American Indian groups would displace the primitive recreational use of that area for a few days at a time. Infrequent use of a motor vehicle (i.e., once every 2 to 3 years, for no more than 1 to 2 days) by American Indians whose mobility depended on such use for traditional cultural practices would be considered nonimpairing. Consultation between the BLM and American Indians would be needed before a formal closure and authorized use of a motorized vehicle or equipment.

Issue 7--Cultural Resources

Stabilized cultural and historical sites existing within wilderness boundaries would no longer be maintained. Consistent with Wilderness management policy, these sites would be allowed to deteriorate naturally unless an extraordinary scientific resource needed protection. No new stabilization projects or erosion-control measures would be allowed under Alternative C, which would benefit the areas' naturalness by eliminating potential surface- disturbing activities. The wilderness value of naturalness would also benefit from the denial of excavation and collection under this alternative.

Issue 8--Wildlife Habitat

Wildlife projects existing at the time of wilderness designation would be allowed to remain in place. Use of motor vehicles and motorized equipment to maintain these projects would be restricted, as the noise and sight of vehicles would have a negative impact on the wilderness experience of the visitor.

Issue 9--Vegetation

The development of AMPs and the management of livestock to improve forage conditions would benefit wilderness through enhancing the areas' natural character.

After completing a Fire Management Plan for the Planning Area, the BLM would allow wildland fires to burn as long as they did not spread outside the wilderness, or threaten human life or property.

Actions to suppress wildland fires could alter the natural landscape and disrupt the opportunities for solitude and primitive recreation, although the severity of impacts is not measurable. However, suppression actions in wilderness would be executed to minimize surface disturbance and disruption of resources and uses. In the long term, any short-term disruptions by fire could result in improved plant diversity and the return of natural ecological processes.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of non-federal surface (800 acres) and subsurface mineral interests within the boundary of the two wildernesses would enhance wilderness management and values. This enhancement would occur through eliminating both potential development that would be detrimental to the wilderness character, and the need to provide motorized access to these inholdings.

The BLM would also recommend that the Congress amend the boundary of the Cebolla Wilderness to exclude approximately 200 acres of land on the wilderness perimeter owned by Acoma Pueblo. Such an amendment would enhance wilderness management by excluding these non-federal lands from within the boundary.

Summary

Under Alternative C, the wilderness resource would benefit from the designation of 9,340 additional acres of wilderness, for a Planning Area total of 128,440 acres of public land. Visitors seeking primitive and unconfined recreational use would benefit because 52 percent of the Planning Area would be available. Wilderness designation would help maintain the existing natural character of these lands and provide opportunities for solitude through the application of closures and restrictions. The quality of the wilderness experience would be improved because of the visual, cultural and historical values within these areas. Acquisition of private surface and subsurface inholdings would benefit the manageability of these areas, eliminating the need to provide access and the potential for activities that would degrade the areas' naturalness.

Existing uses of the Cebolla, West Malpais and Chain of Craters Wildernesses for livestock grazing, traditional practices by American Indians, wildlife habitat, and primitive and unconfined recreational activities would continue to the extent allowable under the BLM Wilderness Management Policy and the Wilderness Act. Though state highways, county roads and some BLM travel routes adjacent to these areas would remain open, the areas would not be as easily accessible under Alternative C, nor as convenient for use once accessed because of the limited trails, trailheads and facilities near these wildernesses. Interpretive services would be limited to offsite interpretive materials and facilities, primarily to educate the users about proper land ethics, not to direct use to these areas.

Wilderness Suitability

Under Alternative C, the BLM would recommend the entire 18,300 acres of public land within the Chain of Craters WSA as suitable for wilderness designation. Further, it is assumed that the Congress would accept this recommendation and designate the lands as wilderness.

Of the 10,380 acres of public land contiguous to the Cebolla Wilderness, the BLM would recommend 9,340 acres as an addition. It is assumed that the Congress would accept the recommendation and designate these lands as wilderness. It is also assumed that 1,040 acres of public land found unsuitable for designation would be released from interim management and managed under the current land use plan applying to them.

Under Alternative C, if the lands contiguous to the Cebolla Wilderness were not designated as wilderness, no direct impacts to wilderness values would be anticipated from actions implemented to resolve the other nine issues. The BLM would apply a more restrictive VRM class that would exclude visual resource alterations and preserve the existing landscape character.

The opportunity to use these designated areas for motorized recreation would be lost. Travel routes would be closed to the general public. The use of the forage and existing range improvements for livestock

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grazing would be allowed to continue, but the use of motorized vehicles and equipment by livestock operators would be restricted. This would likely cause an inconvenience to livestock operators. American Indian access into these lands by motorized vehicle for traditional cultural practices would be lost with designation.

American Indian Uses & Traditional Cultural Practices

Under Alternative C, actions proposed to resolve the issue listed below would have no impacts on American Indian uses and traditional cultural practices. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

As discussed under Alternative A above, dispersed recreation is expected to continue to increase over the life of the plan. However, the BLM under Alternative C would generally discourage recreational use, so it is assumed that dispersed recreational use would increase less under this alternative. Dispersed recreation would conflict with traditional American Indian uses if visitors intruded into these activities or took items left as offerings. The probability of such incidents under Alternative C would be the lowest of all four alternatives.

Issue 2--Facility Development

Minimized facility development under Alternative C would result in fewer intrusions into American Indian traditional uses of the Planning Area.

Issue 3--Access & Transportation

It is common for vehicles to be driven off established roads during piñon gathering and other traditional activities. Under Alternative C, no off-road vehicle use would be allowed. All access for traditional Indian uses would have to be non-motorized (i.e., foot, horseback).

Altogether 133.1 of the 362.8 miles of existing roads and trails would be closed and 30 miles would be available for authorized users under Alternative C, leaving 199.7 miles open for use by the general public. A large proportion of the closed roads would be in the Chain of Craters WSA, which would become wilderness under this alternative, but other areas would be affected as well. Portions of the Brazo, Breaks Non-NCA, and Cerro Brillante Units that are now accessible by vehicle would be at least 1½ miles from vehicle access. These changes would increase privacy but decrease the ease of access for traditional American Indian practices.

Issue 4--Wilderness Management

No special provisions would be made for American Indian use of the three wildernesses. Access by foot or horseback only could preclude activities needed for American Indian groups to continue certain traditions that maintained their close ties to El Malpais.

Issue 5--Wilderness Suitability

The BLM under Alternative C would recommend that 18,300 acres in the Chain of Craters WSA area be designated as wilderness. This would result in less vehicle-based recreation and more pedestrian use, but overall would probably not change the absolute number of visitors to this area.

Issue 7--Cultural Resources

Under the Natural Processes Alternative, the BLM would impose firm restrictions on issuing permits for research or mitigation that required physical alteration of prehistoric archeological sites. The agency also virtually would eliminate site-specific management practices. These provisions would minimize human intrusions, thereby having positive impacts on American Indian practices and uses from the standpoint of traditional Navajo and Pueblo values.

The BLM under Alternative C would also forbid the collection of surface artifacts by all people, including members of Acoma Pueblo. This traditional cultural activity could not occur within the Planning Area or elsewhere on public lands, resulting in a negative impact to traditional Acoma practices.

Issue 8--Wildlife Habitat

Reintroduction of native species and maintenance of existing wildlife habitat projects would be unlikely to affect American Indian uses. The possible effects of fire are discussed under Issue 9 below.

Issue 9--Vegetation

Prescribed and wildland fires would increase vegetative diversity, but their effects on specific plants used by American Indians in El Malpais is not known. Changes in grazing practices would be unlikely to affect American Indian uses.

Issue 10--Boundary & Land Ownership Adjustments

Proposed changes in the NCA boundary would not affect traditional American Indian uses. Acquisition of the treadway or an easement for the CDNST would increase recreational use in the Chain of Craters WSA, which is a sensitive area for the Ramah Navajos. Addition of 9,340 acres to the Cebolla Wilderness would restrict vehicle use, including for traditional practices.

Summary

Recreational use could potentially cause some serious conflicts with traditional cultural practices in the Planning Area because it would reduce privacy and increase the likelihood of intrusion. Under Alternative C, the BLM would provide less encouragement for recreational activities, thereby minimizing the adverse effects of recreational use. The Chain of Craters Back Country Byway would be decommissioned, and a treadway would be formalized along the CDNST only where needed to reduce resource damage.

Vehicle access would be minimized under Alternative C, decreasing ease of access for traditional activities but increasing privacy. A total of 9,180 acres would be recommended for addition to the Cebolla Wilderness, and the Chain of Craters WSA would be recommended for designation. No provision would be made for American Indian access into these wildernesses.

Many activities that could conflict with traditional cultural practices would be minimized under this alternative. Archeological research involving excavation would be prohibited, and active cultural resource management (which sometimes includes actions regarded as intrusive) would be minimal. Vegetative manipulation involving the use of chemicals is not proposed under Alternative C.

Prohibitions on collection of prehistoric pottery for use as temper in contemporary pottery would constitute an adverse impact on traditional American Indian practices. Depending on availability of alternative sources, prohibitions on fuelwood gathering also would have an adverse impact on the ability of local Indians to obtain wood for heating, cooking and other uses.

Exclusion of certain Acoma Tribal lands from the NCA is recommended under Alternative C, which could have a positive effect by reducing the potential for intrusion there. Acquisition of lands and mineral interests and possible expansion of the NCA would help to exclude uses incompatible with traditional American Indian uses, therefore having positive impacts.

Cultural Resources

Under Alternative C, actions proposed to resolve the issues listed below would have no impacts on cultural resources. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat

Issue 1--Recreation

The Natural Processes Alternative would benefit cultural resources because the BLM would discourage recreational use of the Planning Area. However, the dispersed use allowed could cause impacts to cultural resources that were more difficult to control and evaluate than if recreation use was concentrated in specific areas. In the absence of onsite interpretations, stewardship messages would likely be less effective than if they were presented at cultural sites.

Issue 2--Facility Development

Under Alternative C, the BLM proposes no campgrounds, hiking trails, picnic areas, or other facilities to accommodate recreational use. To the extent that absence of these facilities discouraged public use, impacts such as illegal surface collection and pedestrian trampling of archaeological properties would be reduced. At the same time, facilities would provide a way to control visitor use and direct it toward areas where it would have minimal impact. This option would be foregone under the Natural Processes Alternative.

Issue 3--Access & Transportation

Under Alternative C, no off-road vehicle use would be allowed. This restriction would benefit cultural resources because such use could result in direct damage as vehicles ran over archeological sites, and could lead to erosion.

Altogether, 133.1 of the 362.8 miles of existing roads and trails would be closed under Alternative C and 30 would be open to authorized users only, leaving 199.7 miles open for public use. Many of the closed roads and trails would be in the Chain of Craters WSA and the Cerro Brillante Unit, which have low densities of cultural resources, so the closures would have no effect there. Other roads and trails to be closed are in the Spur, Breaks, and Breaks Non-NCA Units, which have high site densities, and in the Brazo and Cerritos de Jaspe Units, which have moderate densities of cultural resources. Limiting motor vehicle access in these areas would protect prehistoric and historical cultural resources by making it more difficult for scavengers and looters to bring in excavation gear, or to transport away materials such as building stone or weathered wood. At the same time, the closures would make patrolling by BLM staff more difficult.

Issue 4--Wilderness Management

Under Alternative C, no archeological research involving extractive activities or resulting in long-term or short-term impacts to wilderness values would be allowed. This would essentially restrict scientific investigation, including investigation of threatened resources, to in-field recordation. In addition, no attempt would be made to stabilize or control erosion at any specific site within the two wildernesses, regardless of resource value. However, continued patrol and surveillance, and measures that were not site-specific (such as improved grazing management) would benefit cultural resources.

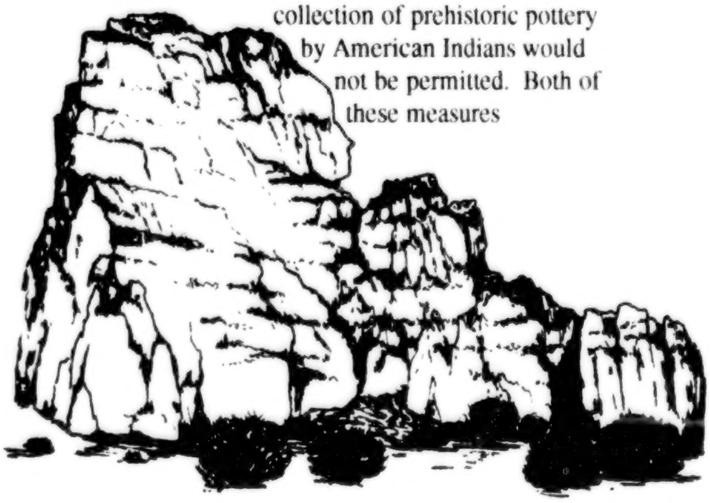
Issue 5--Wilderness Suitability

If the Congress designated as wilderness the Chain of Craters WSA and lands adjacent to the Cebolla Wilderness, the cultural resource impacts described under Issue 4 above would also apply to these areas.

Issue 7--Cultural Resources

Under Alternative C, the BLM would seek to minimize human impacts, both beneficial and adverse. The natural processes of deterioration and erosion would generally be left unchecked. Historical homesteads would deteriorate rapidly. Many of these sites, as well as prehistoric masonry ruins that have been stabilized, could lose their interpretive value during the life of this plan. Scientific values would be lost rapidly at a handful of sites that are being destroyed by gully erosion. Many other sites would experience mild negative impacts as a result of sheet erosion, although these impacts might be partially offset by the results of improved grazing management.

However, reduced vehicle access and vigorous ARPA enforcement would result in positive impacts. Cultural resources would not be subject to scientific investigations that required physical alteration, and collection of prehistoric pottery by American Indians would not be permitted. Both of these measures



would produce beneficial long-term impacts to the scientific value of cultural resources in the Planning Area.

Issue 9--Vegetation

Livestock grazing could adversely affect cultural resources by reducing vegetation, thereby contributing to erosion. Trampling could break artifacts on the ground surface, and livestock could rub against historical structures, contributing to their deterioration. Erosion affecting cultural resources would undoubtedly continue, but would be reduced by improved grazing management under the Natural Processes Alternative. Eight historical homesteads in the Planning Area have been fenced to exclude livestock. Under Alternative C, no new fencing would be undertaken, and existing fencing would not be maintained, so homesteads could be damaged by livestock.

Fires, including wildland fires under prescription and prescribed fires, could destroy historical sites with flammable elements and damage the scientific potential of surface and near-surface archeological materials. Activities associated with fire suppression such as the establishment of fire camps and construction of fire lines could also result in adverse impacts to cultural resources. Under Alternative C, no historical sites would receive special protection from fire, although the BLM would seek to avoid inadvertently burning such structures during prescribed fires. Locations of proposed prescribed fires would not generally be inventoried to Class III standards if they were in areas of low site density (refer to Map 37). Class III inventory would be considered in zones of high site density, and a cultural resource advisor would be required during fire suppression activities, regardless of the source of ignition.

Issue 10--Boundary & Land Ownership Adjustments

Expansion of the NCA to include the Breaks Non-NCA Unit and the Tank Canyon-SFO Unit (which would require Congressional action) would add numerous significant Anasazi ruins to the NCA, providing them increased ARPA protection but decreased site-specific management attention. Pending legislation to modify the NCA boundaries, the BLM would manage the Breaks Non-NCA Unit under the provisions of this plan and the Tank Canyon-SFO Unit under the Socorro Resource Management Plan (where the unit is identified for sale or disposal). Site-specific management actions would be possible in the Tank Canyon-SFO Unit, which includes the Newton Site.

No easements or acquisitions specifically intended to protect cultural resources would be pursued. Closure of lands to mineral entry would help prevent inadvertent damage to cultural resources.

Changes in wilderness boundaries would bring an additional 9,180 acres into wilderness, with the impacts discussed under Issue 4 above. Exclusion of 960 acres of Acoma Pueblo lands from the Planning Area would have no effect on cultural resources.

Summary

Few developments are planned under Alternative C, and NCA designation and the provisions of this plan would be effective in protecting cultural resources from damage as a result of deliberate, planned actions. With appropriate survey and mitigation, the minimal developments under Alternative C, including vegetative treatments and other similar proposals, should have no effect on cultural resources.

However, natural and human factors would continue to degrade cultural resources. Natural deterioration would affect historical homesteads, while gully and sheet erosion would impact archeological sites. Both archeological and historical sites would continue to be vulnerable to illegal collection, looting, and vandalism.

Illegal surface collection is primarily an unintended effect of recreational uses, which would be encouraged less under Alternative C than the other alternatives in this plan. At the same time, some mitigating measures such as interpretation would be less effective, and documentation of archeological sites would receive little emphasis.

Few proposals for recreational developments and designated areas of use are made under Alternative C, and most would be in non-sensitive areas. Vehicle use would be restricted to existing roads and trails, many of which would be closed. This would make access more difficult for vandals as well as BLM law enforcement and monitoring personnel.

Few cultural resource management activities intended to have a positive effect on specific sites would be included under Alternative C. The strategy for controlling erosion would emphasize actions that affected the Planning Area as a whole, such as improved grazing management. Most cultural resources would be subject to natural deterioration and could lose much of their interpretive potential during the 15- to 20-year life of this plan. Scientific values could be adversely affected as well. Scientific investigations involving physical alteration of cultural resource properties would be prohibited, minimizing current scientific knowledge, but preserving long-term research potential.

Wildlife Habitat

Under Alternative C, actions proposed to resolve the issues listed below would have no impacts on wildlife habitat, or the magnitude of the impacts would be negligible. Impacts of resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources

Issue 1--Recreation & Issue 2--Facility Development

Under Alternative C, the BLM would emphasize natural processes, and would discourage or limit some recreational opportunities (e.g., hiking, camping, picnicking, interpretive tours, horseback riding, mountain biking). Limiting recreational activities within the Planning Area would decrease the impacts to wildlife and their habitats.

Three recreation areas (Ranger Station, The Narrows, La Ventana Natural Arch) and four trails (CDNST, Narrows Rim, La Ventana Natural Arch, Hole-in-the-Wall) would continue to be used under this alternative. The impacts of use in these areas are analyzed under Alternative A. The existing recreational activities and facilities have resulted in a direct loss of wildlife habitat from development (19 acres), and a broader area of wildlife disturbance from human use of the area (3,880 acres--refer to Table 4-1).

The BLM would encourage dispersed recreation under Alternative C. No new facilities would be built except where site hardening or redirecting recreational activities to a more dispersed condition was needed. No camping would be allowed at The Narrows. Recreational visitors would still be allowed to drive on many of the roads, but no back country byways would be designated and activities would be encouraged outside the Planning Area.

Under Alternative C, wildlife and their habitats would benefit to the greatest extent of any alternatives. Fewer visitors (only those who knew about the area) and less vehicles would result in fewer impacts to habitats and fewer disturbances to wildlife species through human activities. It is estimated that wildlife would be disturbed on 320 acres per year from these dispersed activities.

Issue 3--Access & Transportation

Under Alternative C, wildlife would benefit from the closing of 133.1 miles (37 percent) of the roads in the Planning Area (refer to Table 2-11). The lands adjacent to the closed roads would not be subject to habitat degradation from vegetation loss and soil disturbance caused by vehicles and other human activities. In addition, these roads would eventually revegetate and provide additional habitat with reduced disturbance to wildlife populations within the area. However, near roads that were designated for use, wildlife habitat would continue to be subject to degradation from vehicles and other human activities.

Issue 4--Wilderness Management

Impacts to wildlife habitat under Alternative C would be the same as those identified for Alternative A. In addition, the management emphasis on natural processes would benefit wildlife species and their habitats to a greater extent than under Alternative A or B, in which the primary emphasis would be on the recreational qualities of wilderness.

Issue 5--Wilderness Suitability

If the Congress designated the Chain of Craters as wilderness, additional benefits to wildlife from protective and enhancement measures would occur. Approximately 47 miles of vehicular routes would be closed, which would eventually revegetate and pro-

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vide additional habitat with reduced disturbance to wildlife populations within the area.

The designation of 9,340 acres of the 10,380 acres of lands contiguous to the Cebolla Wilderness would protect and enhance wildlife habitat because human activities in these areas would be limited. However, management of these areas as wilderness would preclude or modify certain wildlife habitat improvement projects there.

Issue 8--Wildlife Habitat

Under Alternative C, no new habitat enhancement projects would be planned, except where necessary to support a special-status species. An estimated six ½-acre projects would be developed for special-status species over the life of this plan. Wildland fires would be used to maintain habitats in the proper quality and quantity to support existing wildlife populations. It is anticipated that these fires would burn an average of 1,000 acres annually.

Issue 9--Vegetation

Under Alternative C, vegetative treatments would include livestock grazing management practices and wildland fires under prescription. With the emphasis on minimizing human management practices under this alternative, benefits to wildlife would be limited in the short term.

Riparian management would be implemented using only grazing management practices to achieve properly functioning condition, with no new exclosures being constructed. No planting of riparian species or removal of exotic species (e.g., saltcedar, Russian olive) would be undertaken under Alternative C. The objective of accomplishing properly functioning riparian areas would not be obtained in the short term and could possibly be jeopardized in the long term. Existing riparian habitats are not in a natural condition as the result of aggressive fire suppression, invasion of exotic species, and other human uses (e.g., grazing, homesteading).

Issue 10--Boundary & Land Ownership Adjustments

Only those lands needed to protect the integrity of the NCA and wilderness values would be acquired under Alternative C. As less lands would be acquired, the benefits to wildlife through improved manageability would not be as great as under other alternatives.

Summary

Under Alternative C, activities associated with recreation, interpretation, and facility development would result in long-term impacts to wildlife and their habitats on 19 acres. Near developed facilities or areas with high levels of human use, an additional disturbance of 4,200 acres would occur. Dispersed activities (e.g., hiking, sightseeing, guided tours) would generally create intermittent impacts to wildlife (lasting for a few hours or days). Wilderness and the WSA would provide the maximum benefits to wildlife and their habitats because of protective measures. Wildland fires totalling 1,000 acres annually would create short-term, site-specific negative impacts, but would result in a long-term improvement of habitat productivity.

Threatened, Endangered & Other Special-Status Species

As discussed under Alternative A, the BLM is in informal consultation with the FWS under Section 7 of the ESA to evaluate the Planning Area. As part of this process, a biological assessment is being prepared for all T&E and special-status species. The process is anticipated to be completed in early 1999, and will determine if formal consultation on any species or habitat is needed. Because the BLM is committed to protecting T&E and other special-status plant and animal species, in particular under the ESA and BLM policies, no actions under any of the alternatives would be allowed to adversely affect any of these species.

Vegetation

Under Alternative C, actions proposed to resolve the issues listed below would have the same impacts on accomplishing vegetative objectives as those described above for Alternative A. Impacts of resolving the remaining issue are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development

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- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

The BLM would establish a common set of long-term objectives to guide management and use of vegetation in the Planning Area. Under Alternative C, livestock grazing and fire would receive management emphasis.

During the short term, livestock grazing management would provide for improved vigor, health, and productivity of herbaceous species. In the long term, livestock grazing management would allow for progress in accomplishing vegetative objectives.

Prescribed and wildland fires would be used for fuel load management, to prevent catastrophic fire and protect property. Three fires ranging in size from 50 to 1,000 acres each would be expected. These fires would occur under specified conditions (prescriptions) to reduce ground fuel and prevent fires from moving to the treetops. Resource enhancement (including restoration of ponderosa pine communities) would be a secondary benefit.

Vegetation--Forest & Woodland Resources

Under Alternative C, actions proposed to resolve the issues listed below would have the same impacts on forests and woodlands as those described above for Alternative A. Impacts of the remaining issue are discussed in the paragraph following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

No thinnings would be conducted. As a result, piñon-juniper would be expected to increase in open woodlands, savannas and/or shrub-grasslands. Up to three fires ranging in size from 50 to 1,000 acres each would be expected. The fires would improve the ponderosa pine forest community and open piñon-juniper woodlands.

Vegetation--Rangeland Resources

Under Alternative C, actions proposed to resolve the issues listed below would have the same impacts on rangeland resources as those described above for Alternative A. Impacts of resolving the remaining issue are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Achieving the Potential Natural Communities would be part of the objectives established in AMPs. Rest from livestock grazing use would be increased. Because of the requirement for yearlong rest, livestock grazing use would have to be reduced. The size of the reduction would be based on vegetative monitoring studies and would be sufficient to ensure proper utilization. No new rangeland improvements would be permitted to assist in providing for increased rest from livestock grazing use.

During the short term, improvements in vigor, productivity and reproduction for grass species would be slower for those areas where reductions in livestock grazing use were needed. Once proper grazing

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use was attained, anticipated improvements in vegetation would begin. As productivity improved, increases in livestock grazing use would be permitted. The increases would be based on monitoring studies and would not exceed current grazing preference.

In the long term, cool-season grasses and desirable shrubs would increase. Based on improvements in vegetative vigor, reproduction and rest from livestock grazing, vegetation would be less susceptible to the negative effects of drought.

Social & Economic Conditions

Actions proposed to resolve the issues of recreation, vegetation (grazing), and American Indian uses and traditional cultural practices could potentially have social and/ or economic impacts. However, the differences proposed for resource use and development between alternatives would not create measurably different impacts. Therefore, the impacts for Alternative C would be the same as those described above for Alternative A.

Soil, Water & Air Resources

Under Alternative C, actions proposed to resolve the issues listed below would have the same impacts on soil, water and air as those described above for Alternative A. Impacts from resolving the remaining issue are discussed in the paragraph following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Improvements in watershed would occur primarily as the result of livestock grazing management and fire. Vegetative ground cover would be expected to increase, reducing the likelihood of soil loss through wind and water erosion. Within 2 to 3 years after burning, increases in vegetative understory (i.e., forbs, grasses and shrubs) would be expected, which would reduce erosion potential to less than existed before the fire. Areas burned to reduce fuel load could burn hotter, which would lengthen the vegetative recovery period. Burn prescriptions (e.g., wind speed, temperature, humidity) would be used to help reduce the risk of vegetative damage from fire heat. In the long term, the layering of vegetation (i.e., forbs, grasses, shrubs and trees) would improve, reducing the likelihood of soil loss through wind and water erosion.

Visual Resource Management

Under Alternative C, actions proposed to resolve the issues listed below would have negligible short- or long-term impacts that would exceed the VRM objectives assigned to public lands within the Planning Area. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat

Issue 3--Access & Transportation

Confining vehicles to designated travel routes would enhance the Planning Area's visual resources by reducing the potential for additional losses of vegetation, soil compaction and erosion from vehicle use, thus limiting visual contrasts. Closed roads would be allowed to revegetate, which would reduce the visual contrasts created by landform and vegetation alterations from the travel routes.

Issue 4--Wilderness Management

The assignment of VRM Class I to 128,440 acres of designated wilderness would preserve the visual resources there. Activities that did not appear to be natural would be prevented.

Issue 7--Cultural Resources

Construction of erosion-control structures and stabilization of cultural sites would only be undertaken if values were threatened and local American Indian groups concurred. Projects undertaken would create only short-term adverse impacts to visual resources from construction disturbance and placement of structures in the landscape. However, no long-term impact would be evident because native material would be used to build the control structures, they would be low-lying horizontal structures, and would be placed where disturbance was already occurring from erosion. Such structures and stabilization would likely enhance the visual quality of the local area as erosion was abated and the area restored to resource production.

Issue 9--Vegetation

The continued use of forage and range improvements for livestock management would remain evident in the landscapes, so the existing visual contrasts would remain. With up to 3 fires annually, each of which would burn between 50 and 1,500 acres, short-term impacts would occur as the result of visible contrasts between the blackened, burned areas and the surrounding unburned areas. Over the long term, burned areas would rehabilitate, creating vegetative diversity and plant vigor that would enhance the visual resources in the Planning Area.

Issue 10--Boundary & Land Ownership Adjustments

The acquisition of non-federal surface and subsurface estate would help preserve scenic quality by managing these lands to protect their visual quality and minimizing the degree of contrast that could occur. These lands are currently not protected from developments that could be perceived as degrading to visual resources.

Summary

Visual resources would be maintained or enhanced through the assignment of VRM Classes I and II, the two most restrictive management classes, to almost the entire Planning Area. VRM Class III, a less restrictive management class, would be assigned to only 60 acres of public land. With few surface-disturbing facilities proposed under Alternative C, localized adverse impacts to visual resources would be negligible. The closing of 133.1 miles of travel routes and allowing them to revegetate would benefit visual resources by reducing the visual contrasts created by the routes. The designation of a greater amount of public land as wilderness would also benefit visual resources because the natural appearance on these 128,440 acres would be protected.

Cumulative Impacts

Under Alternative C, the cumulative impacts of actions proposed to resolve the issues would be the same as those identified under Alternative A above.

ALTERNATIVE D--BALANCED MANAGEMENT (PREFERRED ALTERNATIVE)

Recreation & Facilities

Under Alternative D, actions proposed to resolve the issues listed below would have no impacts on recreation or facility development, or the magnitude of the impacts would be negligible. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat

Issue 1--Recreation

In general, opportunities would be more developed and better defined for those who enjoyed concentrated recreation. Developed camping and picnicking opportunities would increase, and hiking opportunities would be more defined, as the number of identified trails would increase from 5 to 15. Opportunities for horseback riding would be the same as under Alternative B. The quality of hunting would likely improve as more roads would be closed than under Alternative A. Mountain biking opportunities and users would increase, but not to the level that would be expected under Alternative B. The number of back country byway users would likely increase as these areas were improved and marketed. Visitors interested in cultural or historical properties would

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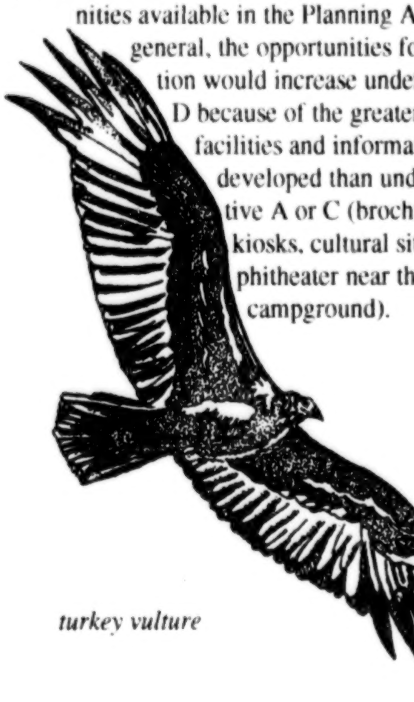
find up to 10 different opportunities for exploration. However, opportunities to drive for pleasure would decrease because the ROS would be managed for a decrease of 15 percent in semi-primitive motorized acreage.

Issue 2--Facility Development

A total of 44 acres (less than 1 percent of the Planning Area) would be disturbed directly by recreational developments. Developed facilities for camping and horseback riding would likely draw more users. Approximately 57 miles of developed hiking trail would increase opportunities for recreationists. Trailhead facilities would offer similar opportunities as those indicated under Alternative B, with a more primitive style and fewer sites developed. Under Alternative D, opportunities for mountain biking would not be promoted through developed facilities; rather, facilities would be built if the Limits of Acceptable Change were exceeded because of increased mountain bike use.

Opportunities for picnicking at developed areas would increase by 50 percent. Recreationists would find driving into the back country for pleasure also increasing by 100 percent, with the designation of an additional back country byway. Areas for watching wildlife would be identified, and entry identification signs would clarify the variety of recreation opportunities available in the Planning Area. In general, the opportunities for interpretation would increase under Alternative D because of the greater number of facilities and information sources developed than under Alternative A or C (brochures, signs, kiosks, cultural sites, the amphitheater near the Spur campground).



turkey vulture

Issue 3--Access & Transportation

Visitors would have access to the Planning Area on 273.1 miles of road designated as open. This would decrease opportunities for recreationists who were interested in driving for pleasure or back-country driving. Cross-country access by nonmotorized means would remain as is and provide opportunities for hiking, mountain biking, horseback riding or other recreational activities.

Issue 5--Wilderness Suitability

If the Congress accepted the BLM's recommendation not to designate as wilderness the Chain of Craters WSA, these lands would be open for recreational developments, and opportunities would increase for interested visitors. Driving for pleasure, hiking and mountain biking would not be limited by a wilderness designation. Under Alternative D, the BLM would also recommend a net 3,930 acres as additions to the Cebolla Wilderness, increasing the Planning Area's wilderness to 105,570 acres total (including non-BLM land).

Issue 7--Cultural Resources

Under Alternative D, the BLM would allocate up to 10 sites for public use, providing an increase in sightseeing opportunities for those visitors interested in cultural or historical properties. Scientific investigations would further enhance these opportunities. Some recreationists would be attracted to sites with antiquities signs, but others would dislike this visual intrusion.

Issue 9--Vegetation

Just as under the No Action Alternative, prescribed fires would decrease recreation opportunities during the short term (the burn period and rehabilitation). However, the impact under Alternative D would be greater because the acreage proposed to burn would be larger.

Other vegetative manipulations would produce short-term impacts to recreation. During the course of the action, visitor use to the area would be restricted to protect health and safety. Immediately after the treatment some scenic disturbance would be noticed by visitors and users. In the long term, recreationists would see an increase in the diversity of the vegetation throughout the Planning Area, improved vegetative and wildlife habitat health.

Issue 10--Boundary & Land Ownership Adjustments

If the Congress followed the BLM's recommendation for the proposed boundary changes, the NCA's acreage would increase by 16 percent to 303,400 acres, and the wilderness acreage would increase by 4 percent to 105,570 total acres. This added land would improve the Planning Area's recreation potential.

Access & Transportation

Under Alternative D, actions proposed to resolve the issues listed below would have negligible impacts on access and transportation. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 1--Recreation

Motorized access opportunities would be available on 143,270 acres through the use of 273.1 miles of designated travel routes. For those who preferred areas away from motorized vehicle use, 104,730 acres would be available. Trails designated for mountain bike use would enhance this experience and reduce the conflicts among users.

Issue 2--Facility Development

Recreational use would be enhanced through the construction of facilities such as additional trails, the campground and amphitheater in the Spur Unit. Facilities to accommodate equestrian at The Narrows, Armijo Canyon, Hole-in the Wall and Cerro Brillante would benefit those accessing the Planning Area by this means. The increased use of interpretive and educational material, such as signs, kiosks and brochures would help to inform the public of motorized and nonmotorized access opportunities.

Issue 3--Access & Transportation

Motorized access opportunities would be diminished because the BLM would increase the amount of public land closed to such use by the general public (104,730 acres). On the remainder of the public land in the Planning Area, vehicle travel would be limited to designated routes, resulting in the loss of the opportunity to drive cross country on 12,000 acres that had been previously open or undesignated.

Issue 4--Wilderness Management

An 3,930 additional acres would be closed to motorized vehicle use through the expansion of the Cebolla Wilderness by the Congress.

Issue 5--Wilderness Suitability

If the Congress released the Chain of Craters WSA from further wilderness review, motorized access opportunities would continue but would be diminished through limiting use to designated routes. A total of 13.9 miles of routes would be closed, approximately 30 percent of those inventoried within the WSA.

Of the lands contiguous to the Cebolla Wilderness, 3,930 acres would be recommended for designation and would eventually be closed to motorized and mechanical access, if the Congress designated them. On the contiguous lands found not to be suitable for wilderness designation under Alternative D, motor vehicle access would be limited to designated routes.

Issue 7--Cultural Resources

Developed parking and trails to additional sites would enhance access opportunities for those who wished to visit them.

Issue 9--Vegetation

Periodically for visitor safety, access to public lands in the Planning Area would be prohibited for short periods of time when prescribed fires were ignited. Under Alternative D, up to five prescribed fires ranging in size from 50 to 1,500 acres each would be planned annually.

Summary

The direct impacts of actions proposed under Alternative D on access opportunities would depend on the user's preferred or required method of travel. For those who preferred nonmotorized travel, the entire Planning Area would be available. As the result of wilderness designation on 42 percent of the Planning Area, such opportunities would be enhanced. Access opportunities for people who preferred or were limited to motorized or mechanical means of transport would be provided on 58 percent of the public lands in the Planning Area, as long as the vehicles remained on 273.1 miles of designated travel routes.

An increase in BLM-provided horseback facilities and trails (for hiking and mountain biking) would enhance the opportunity to access public lands and features within the Planning Area. However, periodically certain areas of public land could be temporarily closed because of vegetative treatments and the practice of traditional American Indian activities.

Wilderness Management

Under Alternative D it is assumed that an additional 3,930 acres of public land in the Planning Area would be designated by the Congress as wilderness.

Actions proposed to resolve the issue listed below would have negligible impacts on wilderness. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 4--Wilderness Management

Issue 1--Recreation

Primitive and unconfined recreation use of the wildernesses would be allowed to continue until thelevel of use threatened wilderness character. The 104,730 acres in wilderness would benefit visitors who wished to experience this type of setting.

Issue 2--Facility Development

Additional trailhead facilities located adjacent to the two wildernesses would encourage use by providing a convenient place for visitors to begin their wilderness trip. These facilities would also improve the ability of users to be dispersed throughout the wilderness, which would decrease the potential for encountering other users and help enhance the opportunities for solitude.

Issue 3--Access & Transportation

Approximately 6 miles in the Cebolla Wilderness and 18 miles of access routes in the West Malpais Wilderness have been identified for authorized use by owners of private inholdings and livestock permittees maintaining existing range improvements. The continued evidence of human activity (travel routes and the sights and sounds associated with vehicle use) would diminish the wilderness setting in the adjacent areas.

Issue 5--Wilderness Suitability

Manageability of the Cebolla Wilderness would benefit through modifying the boundary to include an additional 3,930 acres of contiguous public lands. The quality of primitive and unconfined recreation in this wilderness would also benefit, because the additional acreage includes rugged wooded terrain.

Issue 6--American Indian Uses & Traditional Cultural Practices

Closing areas for privacy when traditional American Indian activities were taking place would displace primitive recreational use during the closure period. Infrequent motor vehicle use, i.e., once every 2 to 3 years, for no more than 1 or 2 days by American Indians whose mobility depended on such use for traditional cultural practices would be considered non-impairing to wilderness values. Consultation between the BLM and American Indians would be needed before formal closure and authorized motor vehicle use.

Issue 7--Cultural Resources

Cultural and historical sites stabilized within the boundaries of the wildernesses when designated would continue to be maintained and available for public use. Localized impacts from the survey, collection, excavation, and monitoring of cultural sites would not exceed the levels permitted under the BLM Wilderness Management Policy. Generally cultural resources would be left to the forces of nature. However, if additional stabilization or erosion control measures were needed because an extraordinary resource could be lost, the additional work would be accomplished using the "minimum tool."

Issue 8--Wildlife Habitat

Wildlife projects existing in wilderness at the time of designation would be allowed to remain in place. Use of motor vehicles and motorized equipment to maintain these projects would be restricted. However, the noise and sight of vehicles in wilderness would have a negative impact on the wilderness experience of the user.

Building facilities to enhance an area's value for wildlife would not be consistent with the free operation of natural processes under wilderness management. However, it may be needed for the continued existence or welfare of wildlife living in the wilderness. With consideration of their design, placement, duration, and use, certain permanent installations to maintain conditions for wildlife would be permitted. The resulting change would have to be compatible with wilderness preservation and the installation would be the minimum needed to accomplish the task.

Issue 9--Vegetation

The development of AMPs/CRMPs and the management of livestock to improve forage conditions would benefit wilderness through enhancing the areas' natural character.

Wildland fire suppression in wilderness could alter the natural landscape and disrupt the opportunities for solitude and primitive recreation. The severity of impacts is not measurable, but suppression actions would be carried out to minimize surface disturbance and disruption of wilderness resources and uses. In the long term, any short-term disruptions by fire could result in improved plant diversity and the return of natural ecological processes.

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of non-federal surface (800 acres) and subsurface mineral interests within wilderness boundaries would enhance management and values through eliminating development and motorized access to these inholdings that could be detrimental to wilderness character. Amending the boundary of the Cebolla Wilderness to exclude approximately 200 acres owned by Acoma Pueblo would also enhance wilderness management.

Summary

Under Alternative D, the wilderness resource would benefit on 104,730 acres of public lands designated by the Congress. The opportunities for primitive and unconfined recreation use would be found on 42 percent of the Planning Area. The existence of BLM facilities, state highways, county roads and BLM travel routes adjacent to these areas would continue to provide convenient user access. Wilderness designation would help maintain the existing natural character of these lands and provide opportunities for solitude through the application of closures and restrictions. The quality of the wilderness experience would improve from the supplemental visual, cultural and historical values within these areas. Acquisition of private surface and subsurface inholdings would benefit the wilderness manageability of these areas by eliminating both the need to provide access and the potential for activities that could degrade the areas' naturalness.

Wilderness Suitability

Under Alternative D, it is assumed that the Congress would accept the BLM's recommendation and release the entire 18,300 acres within the Chain of Craters WSA from further wilderness review. It is also assumed that the Congress would designate 3,930 acres of public land contiguous to the Cebolla Wilderness. Those 6,450 acres of public land found to be unsuitable would be released from interim management (by the BLM State Director, 30 days after approval of this El Malpais Plan).

Actions proposed to resolve the issues listed below would have negligible impacts on wilderness suitability. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 4--Wilderness Management
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 2--Facility Development

Facilities would be developed to provide amenities for users and points from which they could change from one mode of travel to another. These facilities adjacent to wilderness would encourage increased use there, which could decrease opportunities for solitude and unconfined recreation.

Issue 3--Access & Transportation

Over the long term, the sights, sounds and designated route imprints in the two areas recommended as suitable would diminish the opportunities for a wilderness experience.

Issue 5--Wilderness Suitability

On those 6,450 acres of public land released from further wilderness study, the values of solitude, naturalness, and primitive and unconfined recreation opportunities could be impaired or lost. The degree of impact would depend on the amount and type of impairing activities taking place.

Issue 6--American Indian Uses & Traditional Cultural Practices

On the east side of the Planning Area, infrequent use of a motor vehicle (i.e., once every 2 to 3 years, for no more than 1 to 2 days) by American Indians whose mobility depended on such use for traditional cultural practices would be considered nonimpairing. However, such use is likely to occur more often on the west side in the Chain of Craters. Continued and frequent access into this area by motor vehicles for traditional cultural practices would diminish its natural appearance and decrease the opportunities for solitude.

Issue 9--Vegetation

The installation of new range improvements for livestock management would adversely impact wilderness values if frequent motorized access was required. If done by mechanical means, treatments and periodic maintenance to ensure the achievement of vegetative goals would also impact wilderness values, especially naturalness.

Summary

Until the Congress acted on the BLM's suitability recommendations, activities within the Chain of Craters WSA and lands contiguous to the Cebolla Wilderness would be constrained by the BLM's Interim Management Policy to protect existing naturalness, opportunities for primitive and unconfined recreation, and solitude.

The existing dispersed types of recreation would have no impact on the suitability of the areas. Motor vehicle use by recreationists and other users would be limited to designated vehicle routes, except as needed to pull off the road when parking. No permanent recreation facilities would be built, so the opportunity for recreational uses of the area that were not dependent on facilities would be maintained.

Use of the area by American Indians for traditional cultural practices would have no impact on wilderness suitability as long as the vehicles remained on designated travel routes. No conflicts would be anticipated from the management of cultural resources, because little evidence exists of such resources within these areas. The assignment of VRM Class II objectives would maintain the existing landscape character and prevent visually dominant changes in the landscape elements. The potential for impairing disturbances from mineral exploration and development does not exist.

American Indian Uses & Traditional Cultural Practices

Under Alternative D, actions proposed to resolve the issues listed below would have no impacts on American Indian uses and traditional cultural practices. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

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- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 8--Wildlife Habitat

Issue 1--Recreation

Under Alternative D, the BLM would emphasize dispersed recreation, which is assumed to increase throughout the 15- to 20-year life of this plan. Dispersed recreation could conflict with traditional American Indian uses if visitors intruded into these activities or took items left as offerings. Under Alternative D the probability of such incidents would continue to increase.

The Ramah Navajos have identified Chain of Craters, including portions of the CDNST, as sensitive. Otherwise no specific conflicts with the locations emphasized under Alternative D are known. However, lava tubes, mountain peaks, archeological sites, and springs are sometimes important in American Indian traditional beliefs and practices.

Issue 2--Facility Development

A campground with parking, toilets, drinking water, an amphitheater, and hiking trail would be established in the Spur Unit. No conflicts are known with traditional American Indian uses in this area.

Five major trailheads would be established at Cerro Brillante, Cerro Americano, The Narrows, West Malpais, and Armijo Canyon (to the Dittert Site, Armijo Canyon Homestead and Springhouse). Other trailheads would be established at locations such as La Rendija, Cerro Rendija, and Chain of Craters only if recreational use in the five primary locations began to result in environmental damage. These facilities would focus recreational use, resulting in increased visitation in their vicinity. Although no specific conflicts with American Indian uses are known, archeological sites, mountain peaks, and springs are often important.

The BLM is establishing a treadway within the CDNST corridor and identifying potential water sources for hikers. If increasing mountain bike use began to result in resource damage, up to 100 miles of formal biking trails would be established in the Chain of Craters, Cerritos de Jaspe, or Brazo Units. The Chain of Craters area in general has been identified as sensitive by the Ramah Navajos. Increased recreation there could disrupt traditional use.

Interpretation at the Dittert Site would include an exhibit panel in the kiosk at the Armijo Canyon trailhead and a self-guided trail with markers keyed to a trail brochure. Lower-level interpretive facilities would include primitive trailheads at the Lobo Canyon Petroglyphs, Ranger Station Reservoir, an historical homestead, West Malpais Schoolhouse, and other cultural resource sites to be identified. Registration boxes would be set up at these sites only if warranted by levels of visitation. No specific conflicts between these proposals and American Indian use have been identified. However, archeological sites are often sensitive and American Indian consultations would be needed as part of the site-specific EAs for these projects.

The NM 117-CR 42-NM 53 loop and a route in the Brazo Unit would be designated as back country byways and marked with signs. This could encourage more recreational use in the Chain of Craters area, which has been identified as sensitive by the Ramah Navajos.

Issue 3--Access & Transportation

It is common for vehicles to be driven off established roads during piñon gathering and other traditional activities. Under Alternative D, no off-road vehicle use would be allowed. Vehicle use would be allowed on designated roads and trails on 143,000 non-wilderness acres of the Planning Area, including the Chain of Craters WSA. Approximately 83 miles of roads would be closed and 273 would remain open.

Under this alternative, portions of the Brazo, Chain of Craters, and Cerro Brillante Units that are now accessible by vehicle would be 1 to 2 miles from vehicle access. These changes would increase privacy but decrease ease of access for traditional American Indian practices.

Issue 4--Wilderness Management

The impacts under Alternative D would be the same as those under Alternative B. American Indians would be allowed to access specific places within the Cebolla and West Malpais Wildernesses by vehicle under certain circumstances. It would have to be shown that, because of the physical condition of mandatory participants or other factors, vehicle use was the "minimum tool" required for access. Other factors such as the frequency and duration of visits would have to be taken into account to ensure that vehicular use would not degrade the areas' overall wilderness qualities.

Issue 5--Wilderness Suitability

Release of the Chain of Craters from WSA status would facilitate access and use of the area by American Indians by allowing continued vehicle use along designated roads and trails. Addition of 3,930 acres to the Cebolla Wilderness would limit vehicle use there, and increase the amount of walking needed for activities such as gathering piñon nuts.

Issue 7--Cultural Resources

For collecting and/or excavating prehistoric archeological sites, Alternative D would be more restrictive than Alternatives A and B, but less restrictive than Alternative C. It would be unlikely but possible that ARPA permits for these activities would be issued during the life of the plan. The Pueblo of Acoma recognizes all prehistoric sites in the Planning Area as ancestral places and, in traditional belief, considers any excavation or collection to be an adverse effect. The BLM is required to consult with American Indians before undertaking such a project, but is not absolutely bound to conform to their wishes. If permits were issued for these activities, adverse impacts to American Indians would result.

Many Pueblo people also regard active management of prehistoric archeological sites as intrusive. Under Alternative D, the BLM would undertake 1,192 acres of cultural resources inventory, post 100 antiquities signs, maintain stabilization projects at three prehistoric sites, and could consider additional prehistoric ruin stabilization or erosion control. In traditional belief, some or all of these actions could constitute an adverse effect.

Under Alternative D, members of Acoma Pueblo could collect prehistoric pottery freely in specially designated portions of the Planning Area. This requirement would restrict this traditional cultural practice and therefore would constitute an adverse impact. Under this alternative the BLM would also collect reference samples of pottery from sites in the areas made available for Acoma use. This measure also would likely be offensive to some traditional Pueblo people.

Issue 9--Vegetation

Springs are sometimes important places in traditional American Indian belief, so special attention would be given to American Indian consultations when springs were fenced to improve riparian areas. Prescribed and wildland fires would increase vegetative diversity, but the effect of this activity on specific plants used by American Indians in El Malpais is not known. Chemical treatments would be of concern to American Indians gathering wild plants, and would be closely coordinated with groups using the area for this purpose.

Issue 10--Boundary & Land Ownership Adjustments

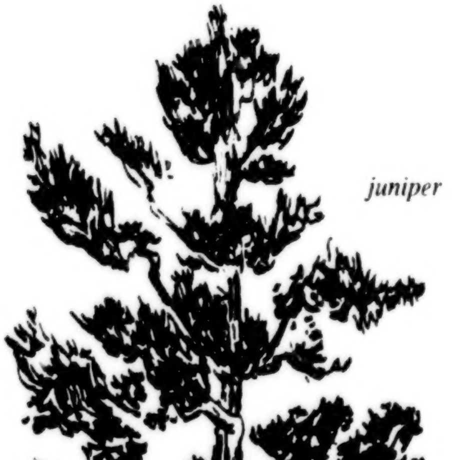
Acquisition of the treadway or an easement for the CDNST would increase recreational use in the Chain of Craters area, which is sensitive for the Ramah Navajos.

Summary

Increasing recreational use would have the most serious and pervasive impacts upon traditional cultural practices in the Planning Area. Such use would create long-term negative impacts by reducing privacy for traditional activities and increasing the likelihood of non-Indian intrusions. Dispersed recreational use would increase under this alternative, encouraged by recreational developments and aspects of the interpretive program. Several proposals would accommodate increased use in the Chain of Craters WSA, which has been identified as sensitive for the Ramah Navajos.

Motor vehicle access would be limited to existing roads and trails. Under this alternative, the BLM would leave more roads open than under Alternative C, but less than under Alternative A or B. Decreased vehicle access would make traditional practices such as piñon nut gathering more difficult, but would enhance privacy for other practices. Provisions would be included under this alternative to allow infrequent vehicle access into wilderness under certain circumstances.

Some of the activities and decisions proposed under Alternative D could have other negative impacts. The BLM would not strictly prohibit archeological research involving excavation, although strongly discouraging it. Some other activities under this alternative such as signing, ruin stabilization, and erosion control intended to protect ruins may be considered intrusive by traditional American Indian people. Collection of prehistoric pottery for use as temper would be allowed, but only through a formal permit process. Chemical treatment as a means of vegetative manipulation could adversely impact people who were gathering herbs and other plant products. Thinning of piñon-juniper stands would be allowed under this alternative, so fuelwood could be available in some years. However, there would be no assurance that sufficient quantities would be made available to meet demand. Depending upon the availability of alternate sources, prohibitions on fuelwood gathering outside the thinned areas may also be an adverse effect.



juniper

Certain Acoma Tribal lands are recommended for exclusion from the Planning Area under this alternative. If the Congress passed legislation, additional lands would be added to the NCA and the impacts, positive and negative, outlined here would apply there also. Some ongoing uses such as fuelwood and piñon nut gathering would become more restricted, but incompatible uses such as commercial fuelwood sales and mineral extraction would be prohibited, which would have a positive impact on American Indian uses and traditional practices. Acquisition of land and mineral interests included under this alternative would also help exclude incompatible uses.

Cultural Resources

Under Alternative D, actions proposed to resolve the issue listed below would have no impacts on cultural resources. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

Under this alternative, the BLM would generally encourage dispersed recreational activities that might affect cultural resources, including camping, hiking, hunting and picnicking. Proposals that led to increased visitation would result in more unauthorized surface collection and casual excavation of prehistoric sites, although the extent of these impacts cannot be quantified. When recreational use was dispersed, adverse impacts would be more difficult to counter.

The BLM would attempt to concentrate camping in the Spur Unit and picnicking at The Narrows, and would designate 57 miles of hiking trail. If these areas and corridors were surveyed, with cultural resources documented and avoided, designation of specific camping areas, picnic areas and hiking trails would be beneficial to cultural resources. Adverse effects that could result from more dispersed use would be partly mitigated by public education, as well as archeological survey and documentation.

Under Alternative D, the BLM would encourage public visitation at the Dittert Site, Ranger Station Reservoir, and at up to six historical homesteads. Documentation is sufficient to protect scientific values at the Dittert Site and the homesteads, although the physical structures at all of these sites would require increased maintenance. Systematic documentation would be needed at the Lobo Canyon Petroglyphs, with data recovery through systematic collection of surface materials at the Ranger Station Reservoir.

Issue 2--Facility Development

Development of 57 miles of trail would focus visitation onto particular routes that could be modified to direct visitor use away from sensitive cultural resources. The picnic area and trailheads are not known to be in especially sensitive areas, but Class III inventories would be conducted in a ¼-mile radius around these facilities to consider secondary impacts.

The proposed campground in the Spur Unit would require special survey and monitoring. The proposed campground is near areas of dense cultural resources that would be vulnerable to surface collection. In addition to Class III inventories, the BLM would conduct a reconnaissance survey within a 1-mile radius before developing the campground, attempting to locate and document all sites vulnerable to illegal surface collection. The condition of these sites would be monitored carefully, and if any changes in their condition were detected from recreational use of the campground, appropriate mitigating measures would be taken (e.g., data recovery, closure of affected areas to public entry).

Issue 3--Access & Transportation

Under Alternative D, no off-road vehicle use would be allowed, benefitting cultural resources by preventing erosion and direct damage from vehicles running over archeological sites. Approximately 83 miles of roads and trails outside wilderness would be closed and 273 would remain open. Many of the roads and trails to be closed are in the Chain of Craters and Cerro Brillante Units, which have low densities of cultural resources, so these closures would not benefit such resources. Other roads and trails to be closed are in the Spur, Breaks, and Breaks Non-NCA Units, which have high site densities, and in the Brazo and Cerritos de Jaspe Units which have moderate densities. Limiting motor vehicle access in these areas would protect prehistoric and historical cultural resources by making it more difficult for scavengers and looters to bring in excavation gear or to transport away materials such as building stone or weathered wood. At the same time, limited access would make patrol by BLM specialists and law enforcement personnel more difficult.

Issue 4--Wilderness Management

Under the Alternative D, scientific investigations in wilderness areas would be restricted by the "minimum tool" standard and would be limited to activities that resulted in no significant visual, vegetative or other natural resource impact. Resource deterioration due to natural decay and natural erosion would be allowed to continue unless unusual resources were threatened, and even then remedial actions would be restricted by wilderness considerations.

However, wilderness is generally patrolled more intensively than other BLM lands. This would increase the likelihood that ARPA violations would be discovered and reported.

Issue 5--Wilderness Suitability

Under this alternative, additional lands would be added to the Cebolla Wilderness, including some with high densities of cultural resources. The impacts of this addition would be the same as those described above under Issue 4.

Issue 7--Cultural Resources

Under Alternative D, as under Alternative A, the BLM would emphasize conservation of cultural resources for future use. However, under Alternative D, provisions for inventory, NHPA compliance, and scientific investigations that included collection and excavation would be more strict. These measures, as well as proposals for signing, access easements and consolidation of ownership, road closure, monitoring, stabilization, and fire suppression would have mild positive long-term impacts on the scientific and public values of cultural resources.

Stringent requirements for scientific investigations would limit current scientific information from the NCA, but would leave more sites in better condition over the long term. At the levels projected for this alternative it is unlikely that long-term scientific potential of cultural resources within the NCA would be negatively affected.

Under this alternative the BLM would issue permits to members of Acoma Pueblo, allowing them to collect prehistoric pottery for use in the manufacture of contemporary pottery. This would inevitably result in the irretrievable loss of some scientific information. However, issuing individual permits for particular sites or areas would allow the agency to control the scale of this activity, develop and implement mitigating measures. Permits would be restricted to well-documented sites. In many cases buried materials would remain onsite, potentially becoming available for scientific excavation. The BLM could also retain a sample of the surface material for future analysis. Under these conditions, serious short- and long-term adverse impacts would be avoided.

Interpretation would increase public awareness and appreciation of cultural resources, but would inevitably result in the loss of surface artifacts at the Dittert Site and the Ranger Station Reservoir. Sufficient documentation exists for surface artifacts at the Dittert Site, but without mitigation, establishment of a trail at the Ranger Station Reservoir would cause a long-term loss of the scientific value of the site.

Issue 8--Wildlife Habitat

Prairie dog enhancement is proposed for an area at the mouth of Cebolla Canyon near the Cebolla Canyon Community. It is expected that the animals would remain in the fine, valley-bottom sediments, away from the prehistoric resources. However, their behavior would be monitored, and if disturbance encroached into the area of prehistoric ruins, appropriate corrective measures would be taken.

Issue 9--Vegetation

Livestock grazing could adversely affect cultural resources by reducing vegetation and contributing to erosion. Trampling could break artifacts on the ground surface, and livestock rubbing against historical structures could contribute to their deterioration. Erosion affecting cultural resources would undoubtedly continue, but would be reduced by improved grazing management under Alternative D. Eight historical homesteads in the Planning Area have been fenced to exclude livestock, and this alternative provides for additional fencing if warranted.

Any vegetative improvement activity that was likely to result in surface disturbance, such as timber thinning operations that included harvesting the trees, would be subject to Class III cultural resources inventory.

Fire could destroy historical sites with flammable elements and damage the scientific potential of surface and near-surface archeological materials. Associated activities such as establishment of fire camps and construction of fire lines could also result in adverse impacts to cultural resources. Under this alternative, 8 to 12 historical sites have been identified for protection from fire, and other newly discovered sites could be added to the list. Reconnaissance-level surveys looking for sites with flammable materials would be conducted in areas where prescribed fires were proposed. Areas proposed for prescribed fires would not generally be inventoried to Class III standards if they had low site density (refer to Map 37). Class III inventory would be considered in zones of high site density, and a cultural resource advisor would be required during fire suppression activities, regardless of the source of ignition.

Issue 10--Boundary & Land Ownership Adjustments

If completed by the Congress, expansion of the NCA to include the Breaks Non-NCA and Tank Canyon SFO Units would add numerous significant Anasazi ruins, providing them with a higher level of protection and more intensive management. Pending legislation, the Breaks Non-NCA Unit would be subject to provisions of this plan, but the Tank Canyon-SFO Unit would remain subject to the Socorro Resource Management Plan (in which it is identified for sale or disposal).

The easements and acquisition of inholdings proposed under Alternative D could also benefit BLM efforts to manage cultural resources by improving access and consolidating ownership. Closure of lands to mineral entry would help prevent inadvertent damage to cultural resources.

Realignment of cherry-stemmed roads in the Cebolla Wilderness would be subject to a site-specific EA and NHPA compliance. If cultural resources were likely to be affected, appropriate avoidance or other mitigating measures would be adopted.

Summary

NCA designation and the provisions of this plan would be effective in protecting cultural resources from damage as the result of deliberate, planned actions. However, natural and human factors would continue to degrade cultural resources under Alternative D. Natural deterioration would affect historical homesteads, while gully and sheet erosion would affect archeological sites. Both archeological and historical sites would be vulnerable to illegal collection, looting, and vandalism, although these impacts could be decreased somewhat if visitors heeded interpretive messages about the need to leave sites intact.

Recreational development and designated areas of use would be in both nonsensitive and sensitive areas under Alternative D. Additional systematic documentation would be needed in several areas proposed for recreational developments and cultural resources interpretation. Vehicle use would be limited to designated roads, and some existing roads and trails would be closed. These provisions would help protect cultural resources from off-road vehicle damage and make access more difficult for looters, as well as for BLM personnel engaged in monitoring and patrol activities.

Management activities intended to have a positive effect on cultural resources such as stabilization, erosion control, patrol and monitoring would be limited to the most important sites and restricted in wilderness. Archeological research that involved collection and/or excavation would not be prohibited under this alternative, but strongly discouraged.

Wildlife Habitat

Under Alternative D, actions proposed to resolve the issues listed below would have no impacts on wildlife habitat, or the magnitude of the impacts would be considered negligible. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources

Issue 1--Recreation

Under Alternative D, the BLM would emphasize some concentrated and developed recreational opportunities (e.g., hiking, camping, interpretive tours, horseback riding, mountain biking). As identified under Alternative A, three areas (Ranger Station, La Ventana Natural Arch, The Narrows) would continue to be used for recreational activities that would result in impacts to wildlife and/ or their habitats.

Interpretive evening programs would occur three to four times a week at the Spur Unit amphitheater with up to 30 people each night, so approximately 1,920 people would attend during the 16-week summer season. Six additional, interpretive guided hikes with approximately 25 to 50 people each would occur at the Dittert and/or other archeological sites. The anticipated impacts would include disturbance on approximately 2 acres of habitat from foot traffic (¼ acre per site at about seven sites), and in a zone of approximately 280 acres (40 acres per site) near the activities. Wildlife in the immediate vicinity of the activity would be disturbed and vegetative habitat would be crushed by people walking around the area.

Five trails (Ranger Station Reservoir, Narrows Rim, La Ventana Natural Arch, CDNST, Hole-in-the-Wall) would be emphasized for hiking activities under Alternative D. The impacts of these five trails were identified under Alternative A, and would be the same under Alternative D.

Dispersed camping, hiking, picnicking, horseback riding and mountain biking outside the established recreation sites and trails would create only short-term disturbances to wildlife species in the immediate vicinity (e.g., birds flushed from trees, rabbits from bushes). These activities would not be anticipated to cause any long-term impacts. It is estimated that wildlife would be disturbed on 960 acres per year.

Issue 2--Facility Development

Expanded recreational facilities would result in a direct loss of an additional 19 acres of wildlife habitat from the development, and a broader zone of wildlife disturbance on 3,340 acres due to human use of the area (refer to Table 4-1). The development of a campground in the Spur Unit would directly disturb 8 acres of wildlife habitat, and create a disturbance zone of approximately 640 acres.

Additional trails for hiking and sightseeing would be emphasized at 10 cultural, historical and scenic sites throughout the Planning Area during the summer months. For analysis purposes, these trails are each anticipated to be about 2 miles long. The anticipated impacts would include disturbance of approximately 7 acres of habitat from foot traffic and a zone of approximately 1,600 acres within the immediate vicinity of the trails.

Trailheads and limited parking (four to six vehicles each) would be developed at three sites. Direct disturbance of approximately 1 acre (¼ acre each) and a zone of 480 acres (160 acres each) would occur from the establishment of these facilities. Three other trailhead and parking sites would be developed with parking for 8, 20 and 25 vehicles. Direct disturbance of approximately 3 acres and a zone of 480 acres would result from the establishment of these facilities.

In addition to developing the treadway for the CDNST, the BLM would build two primitive trailheads near Cerro Americano and Cerro Brillante, with graded parking for 20 vehicles at each location. These trailhead parking areas would cause a long-term loss of 2 acres of habitat (approximately 1 acre for each site). Wildlife disturbance would be expected over approximately 320 acres near the sites (160 acres each).

The designation of one new back country byway and the expansion of the existing one along CR 42 would create direct impacts to wildlife habitats from vegetative loss and soil disturbance caused by vehicles and other human activities. In addition, increased disturbance (e.g., noise) would occur from these facilities.

New entry and watchable wildlife signs and kiosks would be installed for the new and expanded back country byways under Alternative D. The four kiosks would directly impact approximately ¼ acre each (including a pullout for four to six vehicles each), for a total of 1 acre. In addition, a zone of disturbance around these kiosks would be 160 acres (40 acres each). Two large identification signs built along I-40 would impact approximately 100 to 200 square feet each. All these developments would have direct impacts on habitats, but because they would be installed along established roads, the impacts would be less than if the developments were in undisturbed locations.

Issue 3--Access & Transportation

Under Alternative D, vehicle use would be restricted to 273.1 miles of roads outside wilderness (refer to Table 2-11). Wildlife would benefit from closing 83.4 miles (23 percent) of the roads in the Planning Area. The lands adjacent to the closed roads would not be subject to habitat degradation from vegetation loss and soil disturbance caused by vehicles and other human activities. Limiting vehicles to designated roads would also reduce habitat degradation by minimizing the number of new roads that appeared over time. In addition, closed roads would eventually revegetate, providing additional habitat with reduced disturbance to wildlife populations within the area.

Habitat along roads that continued to be designated for use would be subject to ongoing degradation from vehicles and other human activities.

Issue 4--Wilderness Management

Impacts on wildlife habitat from wilderness management under Alternative D would be the same as those identified under Alternative A. However, the primary emphasis under Alternative D would be on the recreational qualities of the wilderness setting.

Issue 5--Wilderness Suitability

If the Congress designated 3,930 acres contiguous to the Cebolla Wilderness, wildlife habitat would be protected and enhanced. Until designation, these lands would be managed under the Interim Management Policy (except where it applied to minerals), which would also protect wildlife habitat. Under Alternative D, a smaller quantity of lands would be recommended for wilderness (5,410 acres) than under Alternative C, but more than under Alternative A or B, under which no lands would be recommended.

However, management of this area under the Interim Management Policy and potentially as wilderness could preclude or modify certain wildlife habitat improvement projects.

Issue 8--Wildlife Habitat

In addition to maintaining the existing developments (refer to Alternative A), the BLM would undertake up to eight wildlife habitat improvement projects annually (up to three fires and five other projects). The facility projects would disturb approximately ½ acre per project, for a total of 2 acres per year over the 15- to 20-year life of this plan (refer to Table 4-1). The two prescribed fires would average approximately 500 acres each in size, with the wildland fire under prescription estimated at 1,000 acres.

As described under Alternative B, five wildlife enhancement projects would be planned under Alternative D, including three water catchments, a prairie dog colony enhancement area, and a riparian fencing development. The three water developments (1,500-gallon rainwater catchments) would be installed in the Cerro Brillante Unit (T. 6 N., R. 12 W., Sec. 31, SE¼; Sec. 33, NE¼; Sec. 35, NE¼). The long-term loss of habitat would be approximately 1,200 square feet (.02 acre) of grassland. In addition, short-term impacts would include the crushing of vegetation by vehicles and foot traffic during construction, and the disturbance of small wildlife (e.g., birds, rodents, reptiles) within the immediate vicinity of the site.

The prairie dog colony enhancement project would use about 1,000 acres of both the south half of the North Pasture and the Head Pasture of the El Malpais Allotment (Breaks Unit). This unit contains the largest known prairie dog colony within the Planning Area. Enhancement for prairie dogs would help support two special-status species in the area (burrowing owl and mountain plover). If the prairie dog colony expanded to an appropriate size (about 200 acres), it would also be a potential release site for the black-footed ferret, one of the most endangered mammals on earth. Impacts of this colony would be the same as those discussed above under Alternative B.

Under Alternative D the BLM would fence approximately 1 to 1½ miles of riparian habitat along Cebolla Canyon. This is one of the few small perennial streams within the Planning Area, and consequently is considered sensitive wildlife habitat. Approximately 3 acres of habitat would be excluded from livestock grazing under this alternative.

In addition to those projects already identified under this alternative, new projects would be proposed to enhance existing habitats. These projects could each disturb between less than an acre (for water developments) and 1,500 acres (for prescribed and wildland fires) annually.

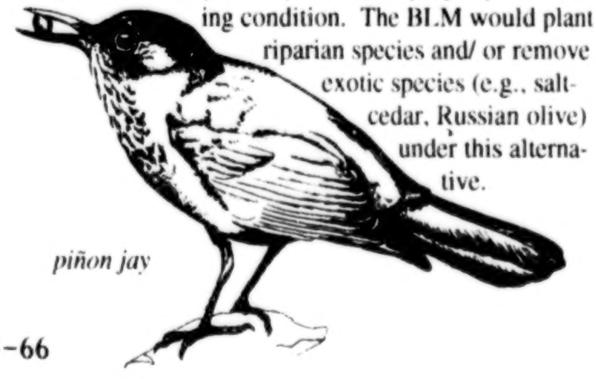
Issue 9--Vegetation

The general positive and negative impacts of vegetative treatments to wildlife and their habitats are identified under Alternative A.

As under Alternative B, under Alternative D the BLM would increase the emphasis on vegetative treatments with the use of livestock grazing, prescribed and wildland fires, and structures (e.g., fences). Piñon-juniper thinning would be emphasized, with approximately 100 acres to be conducted annually to meet vegetative objectives. This vegetative manipulation would cause a short-term disturbance to wildlife habitat, but would create long-term benefits by increasing vegetative diversity and opening up the closed piñon-juniper canopy.

Prescribed and wildland fires would be used to accomplish vegetative objectives for forests, woodlands, and shrub-grasslands. Up to five fires could be expected annually under this alternative, ranging in size from 50 to 1,500 acres each, with an average size of approximately 500 acres (for prescribed fires) to 1,000 acres (for wildland fires under prescription). (These would be the same five fires identified under Wildlife Habitat above.)

Riparian management would be implemented using both exclosures and grazing management practices to accomplish objectives for properly functioning condition. The BLM would plant riparian species and/ or remove exotic species (e.g., saltcedar, Russian olive) under this alternative.



piñon jay

Issue 10--Boundary & Land Ownership Adjustments

Acquisition of lands under Alternative D would be the similar to that identified under Alternative B. The consolidation of private inholdings into BLM administration would benefit wildlife through improved manageability, especially if the acquired lands contained sensitive habitats. Under this alternative, additional lands not identified in Alternative A under the Land Protection Plan would be acquired if owners were willing to sell.

Summary

Under Alternative D, activities associated with recreation, interpretation, and facility development would result in long-term impacts to wildlife and their habitats (43 acres) near areas of high human use or developed facilities. An additional disturbance zone of 9,820 acres would occur from human activities. Dispersed activities (e.g., hiking, sightseeing, guided tours) would generally create intermittent impacts (of a few hours or days) to wildlife. Activities in wilderness and the WSA would generally provide short- and long-term benefits to wildlife and their habitats because of the associated protective measures. Wildlife facilities on approximately 3 acres and vegetation treatments (e.g., prescribed and wildland fires, woodland thinning) totalling 3,100 acres would create short-term, site-specific negative impacts, but would result in long-term improvement of habitat productivity.

Threatened, Endangered & Other Special-Status Species

As discussed under Alternative A, the BLM is conducting informal consultation with the FWS under Section 7 of the ESA to evaluate the Planning Area. As part of the informal consultation process, a Biological Assessment is being prepared for all T&E and other special-status species. This informal consultation process is anticipated to be completed in early 1999, and will determine if formal consultation on any species or habitat is needed. Because the BLM is committed to protecting T&E and other special-status plant and animal species, in particular under the ESA and BLM policies, no actions under any of the alternatives would be allowed to adversely affect any of these species.

Vegetation

Under Alternative D, actions proposed to resolve the issues listed below would have the same impacts on accomplishing vegetative objectives as the actions under Alternative A. Impacts from resolving the remaining issue are discussed in the paragraph following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Achieving the Potential Natural Communities would be the vegetative goal for the Planning Area. As a result, a common set of long-term objectives would be established to guide management and use of vegetation. In general, vegetative species diversity would be expected to improve.

Vegetation--Forest & Woodland Resources

Under Alternative D, actions proposed to resolve the issues listed below would have the same impacts on accomplishing forest and woodland objectives as those for Alternative A. Impacts from resolving the remaining issue are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Up to 100 acres of piñon-juniper could be thinned each year to meet forest and woodland objectives. The thinnings would be conducted at lower elevations where the site potential was open savanna or shrub-grassland. During the life of this plan, a maximum of 2,000 acres could be improved.

Up to 50 acres dominated by piñon-juniper with the potential to be ponderosa pine would also be thinned. Up to five fires ranging in size from 50 to 1,500 acres each could be burned each year to improve the ponderosa pine forest community and provide for an open piñon-juniper woodland community.

Vegetation--Rangeland Resources

Under Alternative D, actions proposed to resolve the issues listed below would have the same impacts as those for Alternative A. Impacts from resolving the remaining issue are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4--Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Achieving the Potential Natural Communities would be the vegetative goal in AMPs/CRMPs. Rest from livestock grazing use would be increased. Rangeland improvements would continue to be built to allow increased rest from grazing use.

During the short term, improvements in vigor, productivity and reproduction would be expected for grass species. With increases in productivity, grazing periods would be adjusted to increase the frequency and duration of rest. In the long term, cool-season grasses and desirable shrubs would increase. Based on improvements in vegetative vigor, reproduction, and rest from livestock grazing, vegetation would be less susceptible to the negative effects of drought.

Social & Economic Conditions

Actions proposed to resolve the issues of recreation, vegetation (grazing), and American Indian uses and traditional cultural practices could potentially have social and/ or economic impacts. However, the differences proposed for resource use and development between alternatives would not create measurably different impacts. Therefore, the impacts for Alternative D would be the same as those described above for Alternative A.

Soil, Water & Air Resources

Under Alternative D, actions proposed to resolve the issues listed below would have the same impacts on soil, water and air as those for Alternative A. Impacts from resolving the remaining issue are discussed in the paragraphs following the list.

- Issue 1--Recreation
- Issue 2--Facility Development
- Issue 3--Access & Transportation
- Issue 4-Wilderness Management
- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices
- Issue 7--Cultural Resources
- Issue 8--Wildlife Habitat
- Issue 10--Boundary & Land Ownership Adjustments

Issue 9--Vegetation

Vegetative ground cover would be expected to increase, reducing the likelihood of soil loss through wind and water erosion. Improvements in watersheds would result primarily from woodland thinning, livestock grazing management and fire. As a result of the disturbance associated with the piñon-juniper thinning, the soil surface could be exposed to increased wind and water erosion. Selecting sites for treatment that were less susceptible to erosion would reduce this short-term risk. After thinning, the BLM would rehabilitate roads as needed to limit erosion.

Within 2 to 3 years after thinning, increases in the vegetative understory (i.e., forbs, grasses and shrubs) would occur, reducing the erosion potential to less than it was before thinning. In the long term, the layering of the vegetative ground cover (i.e., forbs, grasses, shrubs and trees) would improve, reducing the likelihood of soil loss through wind and water erosion.

Vegetative responses to fire would be similar to those anticipated for woodland thinning. Short- and long-term improvements in vegetative cover would be similar, especially in those areas selected to burn for resource enhancement. Fires in the areas burned to reduce fuel load could be hotter, which could lengthen the vegetative recovery period. Burn prescriptions (e.g., for wind speed, temperature, humidity) would be used to help reduce the risk of vegetative damage from fire heat.

Visual Resource Management

Under Alternative D, actions proposed to resolve the issues listed below would have negligible impacts exceeding the VRM objectives assigned to public land within the Planning Area. Impacts from resolving the remaining issues are discussed in the paragraphs following the list.

- Issue 5--Wilderness Suitability
- Issue 6--American Indian Uses & Traditional Cultural Practices

Issue 1--Recreation

Visual resources on 247,940 acres or just slightly less than all of the Planning Area would benefit through the assignment of VRM Class I and II management objectives, as under Alternative C. Management to meet the objectives for these two classes would prevent activities that would create noticeable changes in the elements of form, line, color and texture found in the landscape. VRM Class I, the most restrictive for changes to the landscape, would be assigned to 104,730 acres of wilderness, while the remaining 143,210 acres would fall under VRM Class II management objectives. The visual resources on the 60 acres of VRM Class III lands immediately surrounding the BLM Ranger Station would be subject to a greater degree of change.

Issue 2--Facility Development

The construction of a campground in the Spur Unit would disturb approximately 8 acres, resulting in short-term visual impacts. With the facility's design, the limited number of units, and the location being screened from the major travel routes, minimal impact would occur on the scenic values of the area. Visual resources on another 33 acres would be disturbed by hiking trails and associated facilities (i.e., parking areas and trailheads).

Issue 3--Access & Transportation

Closing 83.4 miles of travel routes and restricting motor vehicle use to the designated routes left open would enhance visual resources. Closed roads would be allowed to revegetate, reducing the visual contrasts from landform and vegetative alterations.

Issue 4--Wilderness Management

The assignment of VRM Class I to 104,730 acres of designated wilderness would preserve the visual resources by preventing activities that would leave human imprints or not appear natural.

Issue 7--Cultural Resources

The construction of erosion-control structures at 256 cultural sites would create short-term visual impacts. However, because native material would be used for the control structures, which would be low-lying, horizontal and placed where erosional disturbance was already occurring, no long-term visual impacts would be evident. The structures would likely enhance the visual quality of the local areas as erosion was abated, the areas were restored to resource production, and further exposure of soil and loss of vegetation was prevented.

Issue 8--Wildlife Habitat

Undertaking up to 10 projects to improve habitat would benefit visual resources over the long term. The construction of three water catchments over the life of the plan would result in less than ¼ acre of disturbance; these would be located, if possible, in areas where they would be screened from view by vegetative and topographic features.

Issue 9--Vegetation

Woodland and forest treatments would create visual contrasts in texture through thinning on areas up to 150 acres in size. The location, amount of thinning required, and spatial distribution of treatments would help determine the severity of the impact on visual resources.

The continued use of forage and range improvements for livestock management would remain evident in the landscape. No new improvements would be proposed.

With up to five fires planned annually, covering 50 to 1,500 acres each, short-term visual impacts would occur from the visibility of the blackened burned area and the contrast between it and the surrounding unburned area. Over the long term, these areas would rehabilitate, helping to create diversity and plant vigor that would enhance visual resources.

Issue 10--Boundary & Land Ownership Adjustments

The acquisition of nonfederal surface and subsurface estate would help preserve scenic quality because these lands would be managed to protect their visual quality by minimizing the degree of contrasts that could occur.

Summary

Localized impacts to visual resources would come from recreational facility development and vegetative treatments under Alternative D. VRM Class III would be assigned to 60 acres, on which activities would be allowed that could moderately alter the form, line, color and texture of the landscape. Activities on the other 247,940 acres of public land in the Planning Area would be restricted to conform to objectives for VRM Classes I and II. Wilderness designation and the assignment of VRM Class I to 104,730 acres of public land would especially help maintain and enhance visual resources. Acquisition of non-federal inholdings (both surface and subsurface) would benefit the management of visual resources by minimizing the contrasts that could occur within the Planning Area.

Cumulative Impacts

Under Alternative D, these would be the same as those identified under Alternative A above.

CHAPTER 5

CONSULTATION AND COORDINATION

INTRODUCTION

This chapter describes the consultation and coordination activities the BLM has carried out while preparing this draft document. Public comments on the document and BLM responses to them will be included in this chapter of the Final El Malpais Plan.

Consultation and coordination have occurred in a variety of ways throughout the planning process. Formal and informal efforts have been made to involve the public, other federal agencies, American Indian tribal groups, state and local governments. More detailed documentation of this effort is on file at the Albuquerque Field Office, as is a complete list of all those contacted.

CONSULTATION REGARDING WILDLIFE

The BLM must consult with the U.S. Fish & Wildlife Service under Section 7 of the Endangered Species Act of 1973 before any agency project is initiated that may affect any federally listed, special-status, plant or wildlife species or its habitat. This proposed plan is considered a major federal action, so the BLM has initiated informal consultation. Letters documenting this activity are on file at the Albuquerque Field Office.

CONSISTENCY WITH OTHER PLANS

BLM planning regulations require that Resource Management Plans be consistent with officially approved or adopted resource-related plans, policies and procedures of other federal agencies, American Indian tribes, state and local governments. To ensure such consistency, the BLM has sent letters to all the groups and agencies listed in Table 5-1. These same entities have received copies of this document for their comment.

No inconsistencies are known between any of the plan alternatives and officially approved and adopted, resource-related plans of any of the above-mentioned groups. The BLM will continue to consult and coordinate during the public comment periods on this plan.

PUBLIC PARTICIPATION

Public participation in this El Malpais Plan is a dynamic process that continues throughout plan development and beyond. In addition to formal public participation, informal contact occurs frequently with public land users and interested persons. All applicable public participation is documented and analyzed in the planning process and kept on file at the Albuquerque Field Office.

Public involvement is essential to the success of the plan. Although public input is welcome at any time, the BLM provides five specific opportunities for public comment, participation or review during the planning process.

1. The BLM published a general Notice of Intent (NOI) to prepare an RMP Amendment/EIS in the *Federal Register* on March 29, 1995 (Vol. 60, No. 60). In the NOI, the agency also identified the general planning criteria and invited public comment. This letter invited them to participate again by attending meetings and/or providing written comments.

2. With the NOI, the BLM officially initiated the scoping process. The agency then held public meetings to develop planning issues and review planning criteria in Grants (April 24-25, 1995), the Ramah Navajo Chapter House (April 25, 1995), and Albuquerque (April 26-27, 1995). The BLM met with the Acoma Tribal government on April 4, 1995, and accepted written comments until scoping officially ended on May 19, 1995. Completing Steps 1 and 2 of the planning process, the agency mailed out information on the results of public scoping on July 24, 1995, to all on the El Malpais Plan mailing list.

3. The BLM is providing a 90-day public comment period for this document. Public meetings to collect oral comments on the plan are scheduled for Albuquerque, Grants and Ramah. To gather input on the suitability of the Chain of Craters Wilderness Study Area for wilderness designation, the agency will also hold a formal public hearing.

4. After publishing the Proposed Plan and Final EIS, the BLM will provide a 30-day period for public protests of the RMP Amendment decisions. (Note: BLM regulations provide that only those people who participated in the planning process may protest a proposed RMP Amendment, and those protests are limited to specific issues commented on during the planning process.)

5. The BLM will then release the ROD and Approved Plan (RMP Amendment), including any significant changes made as the result of an action on a protest. Appeals of activity-level planning decisions can be made by those parties adversely affected at the time the ROD is released.

After the plan is published, the BLM will prepare an annual update to keep members of the public informed about the progress made in plan implementation. The update will also describe the activity plans to be prepared the following year so interested persons may request copies and comment on them. This effort will enable the public to become further involved in specific land management actions resulting from plan implementation.

PREPARERS OF THE PLAN

This plan has been prepared by an interdisciplinary team of BLM resource specialists. Table 5-2 lists the names and qualifications of each team member.

TABLE 5-1

PARTIAL LISTING OF GROUPS AND AGENCIES RECEIVING THE EL MALPAIS PLAN

American Indian Tribes and Groups

Acoma Pueblo
Alamo Navajo Chapter
All Indian Pueblo Council
Cañoncito Navajo Chapter
Laguna Pueblo
Navajo Tribal Council
Ramah Navajo Chapter
Zuni Pueblo

Businesses

Continental Divide Electric Cooperative
Cottonwood Gulch Foundation
First National Bank
G S & S Partnership
Grant County Farm & Livestock
Grants State Bank
Hampton Builders Corporation
Headquarters West Ltd.
Hunter Corporation
Jerome P. McHugh & Associates
Mariah Associates
Moleres Ranch Inc.
NationsBank
NM-AZ Land Company
Pitchford Properties
Public Lands Association
Public Service Co. of NM
Quivira Research Center
REI
Sandia Man Films
SW Off Road Enterprises
Sunset Inc.
Techado Land & Cattle Co.
Western Land Bank
Wilderness Center
Williams Co.
Zia Research
Zuni Archeology Program

Interest Groups

Albuquerque Wildlife Federation
American Wilderness Alliance
American Wildlands
American Fisheries Association
Amigos Bravos
Archeological Conservancy
Backcountry Horsemen
Center for Environmental Research
Central NM Audubon Society
Cibola Chamber of Commerce
Commission of Wilderness Supporters
Continental Divide Trail Society
Defenders of Wildlife
Earth First
East Manzano Alliance
Friends of Paleontology
Forest Guardians
Gallup Convention & Visitors Bureau
Grand Canyon Trust
Greater Gila Biodiversity Project
Los Amigos del Malpais
National Audubon Society
National Parks & Conservation Association
National Wildlife Federation
Natural Resources Defense Council
NM Archeological Council
NM Cattle Growers Association
NM 4 Wheelers
NM Garden Clubs
NM Land Use Alliance
NM Mountain Club
NM PIRG Fund
NM Speleological Society, Sandia Grotto
NM Trials Association
NM Volunteers for the Outdoors
NM Wilderness Coalition
NM Wilderness Study Committee
NM Wildlife Federation
Plateau Sciences Society
Public Land Users Association
Public Lands Action Network
Sandia Mountain Wildlife Association
Sierra Club
Southwest Research & Information Center
The Nature Conservancy
The Wilderness Society
The Wildlife Society
Tonantzin Land Institute
University of Arizona
University of New Mexico

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TABLE 5-1 (concl'd)

Interest Groups, concl'd

Wilderness Watch, NM Chapter
Wildlife Rescue of NM
Zuni Mountain Coalition

Federal Government Agencies

Advisory Council on Historic Preservation
Bureau of Indian Affairs (BIA),
 Eastern Navajo Agency
BIA, Ramah Agency
BIA, Southern Pueblos Agency
BIA, Zuni Agency
Bureau of Mines
Bureau of Reclamation
Dept. of Energy
Dept. of Justice
Dept. of Transportation
Environmental Protection Agency
Fish & Wildlife Service
Dept. of Interior,
 Office of Environmental Project Review
National Park Service (NPS),
 El Malpais Nat'l Monument
NPS, El Morro Nat'l Monument
NPS, Southwest Cluster
Natural Resources Conservation Service
Rural Economic & Community Devel. Admin.
U.S. Air Force
U.S. Army Corps of Engineers
U.S. Forest Service, Cibola National Forest
U.S. Forest Service, Southwest Region
U.S. Geological Survey

State Government Agencies

Governor's Office
Bureau of Mines & Mining
Dept. of Agriculture
Dept. of Finance & Administration,
 State Clearinghouse
Dept. of Game & Fish
Dept. of Highways & Transportation
Dept. of Parks & Recreation
Dept. of Tourism
Environment Dept.
NM Museum of Natural History
NM Office of Indian Affairs
State Game Commission
State Historic Preservation Office
State Land Office

Local Government Agencies

Catron County
Cibola County
City of Gallup
City of Grants
Coalition of AZ/NM Counties
Middle Rio Grande Council of Governments
Village of Milan

U.S. Congress

The Honorable Pete V. Domenici
The Honorable Jeff Bingaman
The Honorable Joe Skeen

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TABLE 5-2

LIST OF PREPARERS

Name	Assignment	Education	Related Experience *
Core Team John Bristol	Wilderness, Recreation, Visual Resources, Transportation Planning	BS Landscape Architecture	BLM Outdoor Recreation Planner, 16 years BLM Landscape Architect, 5 years USFS Landscape Architect, 6 years
John Roney	Cultural Resources, American Indian Concerns, Lands	BA Sociology/Anthropology MA Anthropology	BLM Cultural Resource Specialist, 22 years
Jim Silva	Wildlife Habitat, Threatened & Endangered Species, Vegetation, Fire	BS Biology	BLM Wildlife Biologist/Natural Resources Specialist, 24 years
Margaret Sorensen	Recreation, Facility Development, Interpretation	BS Geology/Education	BLM Interpretive Specialist, 11 years
Gene Tatum	Vegetation, Range Management, Woodland Resources	BS Range Science	BLM Natural Resource Specialist, 5 years BLM Rangeland Mgt. Specialist, 15 years
Natural Resource & Planning Advisors Steve Fischer	Planning Advisor, NCA Manager	BA Political Science, Fine Art MA Anthropology	BLM Natural Resource Specialist, 2 years BLM Project Manager/NCA Manager, 10 years BLM Public Affairs Specialist, 3 years
Kent Hamilton	Planning Advisor, Social & Economic Conditions	BS Agricultural Economics	BLM Community Planner, 10 years BLM Economist, 11 years BIA Economist, 15 years
Patricia McLean	Planning Advisor, Geology & Minerals	BA English	BLM Manager, 11 years (Retired) BLM Administration, 8 years
Jerry Wall	Soil & Water Advisor	BS Forestry Management MS Forest Soils	BLM Soils Scientist, 21 years USFS Soils Scientist, 10 years
J.W. Whitney	Planning Advisor	BS Botany	BLM Natural Resource Specialist, 30 years

TABLE 5-2, concl'd

Name	Assignment	Education	Related Experience [a]
Technical & Document Production Staff M'Lee A. Beazley	Graphic Artist & Desktop Publisher	Graphic Design	BLM Visual Information/Printing Specialist, 4 years BLM Staff Assistant, 10 years
Crista Carroll	Geographer	BFA MA Geography	BLM Geographer, 11 years
Jeanne Holtby	Proofreader	High School Diploma	BLM Range Clerk, 4 years
Greg Homan	Cartographer (NM)	BS - Geography	BLM/Other, 11 years
Barbara Laskar	Word Processor	High School Diploma	BLM Staff Assistant, 20 years
Anna Salas	Word Processor & Process Records Mgr.	High School Diploma	BLM Staff Assistant, 16 years
Jennifer Schultz	Copy Editor & Proofreader	BA Psychology	Temporary Assistant
Sarah W. Spurrier	Writer-Editor	BA Psychology MBA	BLM Writer-Editor, 17 years Technical Writer-Editor, 2 years (pvt. industry)

Note: [a] Acronyms are as follows: BIA--Bureau of Indian Affairs, BLM--Bureau of Land Management, USFS--U.S. Forest Service.

APPENDICES

Appendix A--Highlights of the El Malpais Legislation

Appendix B--BLM Management Actions Since Establishment of the El Malpais NCA (1986)

Appendix C--Recreation Opportunity Spectrum

Appendix D--Limits of Acceptable Change

Appendix E--Visual Resource Management Classes & Objectives

Appendix F--Wildlife Species Known or Potentially Occurring Within Cibola County (El Malpais Planning Area)

Appendix G--Common & Special-Status Plant Species (Vascular) Known or Potentially Occurring Within Cibola County (El Malpais Planning Area)

Appendix H--Summary of Land Protection Plan

Appendix I--Chain of Craters Wilderness Analysis & Suitability Report

Appendix J--Wilderness Inventory of Lands Contiguous to the Cebolla Wilderness

Appendix K--Background Information on Potential Natural Vegetative Communities

Appendix L--Changes in Livestock Grazing Management in the El Malpais NCA & Planning Area

Appendix M--AUMs Permitted in El Malpais National Monument Through December 31, 1997

Appendix N--Technical Description of the Biophysical Land Unit (BLU) Model

Appendix O--Technical Information on Digital Geographic Data Sources, Processing, Analyses & Mapping

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Appendix R--Information on Catron County Lands Recommended for Congressional Inclusion in the El Malpais National Conservation Area

APPENDIX A

HIGHLIGHTS OF THE EL MALPAIS LEGISLATION (P.L. 100-225)

APPENDIX A

HIGHLIGHTS OF THE EL MALPAIS LEGISLATION
(P. L. 100-225)

Title I - National Monument

Establishment of Monument

Section 101 Designates a 114,000-acre National Monument to protect highly significant natural and cultural resources.

Transfer

Section 103 Transfers management of certain lands from the Cibola National Forest to the Department of the Interior to be managed as part of the National Monument.

Management

Section 103 National Monument will be managed according to laws of the National Park System. Management purposes of the monument are to preserve scenery and natural, historic, and cultural resources and to provide public understanding and enjoyment of these resources.

Permits

Section 104 Grazing privileges within the monument will end on January 1, 1998.

Title II - Masau Trail

Designation of Trail

Section 201 Authorizes the National Park Service (NPS) to designate a vehicular tour route linking prehistoric and historic cultural sites in New Mexico and eastern Arizona.

Areas Included

Section 202 Initially the trail will link El Malpais National Monument, El Morro National Monument, Chaco Culture National Historical Park, Aztec Ruins National Monument, Canyon de Chelly National Monument, Pecos National Monument, and Gila Cliff Dwellings National Monument. Additional trail segments designated later by the Secretary of the Interior.

Information and Interpretation

Section 203 The Secretary may enter into cooperative agreements to help interpret natural and cultural resources of such sites. The Secretary, in cooperation with other public, Indian, and non-profit entities, must prepare and distribute information about sites along the trail.

Markers

Section 204 The trail will be marked appropriately. Signs and other informational devices may be accepted as donations.

(Senate Report) The NPS should work closely with the States of New Mexico and Arizona in establishing the trail markers, sharing the costs. If petroglyphs on the Albuquerque West Mesa are added to the National Park System, they should be incorporated into the Masau Trail.

Title III - El Malpais National Conservation Area

Establishment of Area

Section 301	Establishes a 262,690-acre National Conservation Area (NCA) to be managed by the Bureau of Land Management (BLM) to protect natural, cultural, scenic, and wilderness resources of national importance.
(Senate Report)	The BLM is to erect a ranger station along NM State Road 117.

Management

Section 302(a)	The NCA shall be managed according to applicable laws.
(Senate Report)	Resource management plans referred to in this act are those required by the Federal Land Policy and Management Act (FLPMA).
Section 302(b)	Hunting and trapping are to be permitted in the conservation area, subject to limitations of the State of New Mexico.
Section 302(c)	Commercial wood collection is prohibited.
Section 302(d)	Livestock grazing will continue.

Title IV - Wilderness

Designation of Wilderness

Section 401	Designates the 60,000-acre Cebolla Wilderness and the 38,210-acre West Malpais Wilderness.

Management

Section 402	Wilderness is to be managed in accordance with the Wilderness Act of 1964, and grazing is allowed to continue.

Title V - General Provisions

Management Plans

Section 501(a)	Separate General Management Plans will be prepared for the monument and conservation area within 3 years. Each must include an interpretation and public education plan, a public facilities plan (providing for both a visitor center and a multi-agency orientation center), a natural and cultural resource plan, and a wildlife management plan.
(Senate Report)	Cultural resource plans will include wilderness. Appropriate forms of archeological research, including identification, excavation, stabilization, conservation, and protection of cultural resource sites will be permitted. Short-term disturbances resulting from these activities will be rehabilitated. Long-term scientific use of archeological values will conform to the concept that wilderness is devoted to recreational, scenic, scientific, educational, conservational, and historical use.
(House Report)	Wilderness is to be included in the cultural resource plans, which will provide for active identification and management of historic properties, including protection of archeological values from looting, vandalism, and artifact collection. Appropriate forms of research and related activities should be permitted in wilderness, including investigation, identification, stabilization, conservation, and protection of cultural resource sites from deterioration by natural forces or vandalism. Research should be conducted so as to minimize impacts, and short-term disturbances resulting from such activities must be rehabilitated. The BLM should consult with the Advisory Council on Historic Preservation and the State Historic Preservation Officer to establish guidelines for

identification, management, and research of historic properties within wilderness. This guidance is consistent with the Wilderness Act. The need to prevent looting and vandalism is stressed, and public support for protection, recognition, and interpretation is noted.

Section 501(b) A 17,500-acre Wilderness Study Area is established. Wilderness potential of this area will be protected until completion of the General Management Plan, which shall include a review of the wilderness suitability of these lands and a recommendation on this subject.

Section 501(c) All roadless areas within the National Monument (except potential development areas) will be reviewed for wilderness suitability, with a recommendation made in the General Management Plan. Pending submission of the recommendation, managers will protect wilderness potential of the areas.

(Senate Report) Protection of wilderness values does not preclude improving access and providing interpretive and recreational facilities in areas currently penetrated by roads.

(Senate and House Reports) The NPS should use the BLM wilderness inventory policy definition of "road" in determining which lands are "roadless." "Potential development areas" may be included in the wilderness suitability study at the discretion of the agency.

(Senate Report) The Department of the Interior is urged to enter into a cooperative agreement with the Department of Defense to locate and clear military ordnance in the monument and conservation area.

(House Report) The Secretary of the Interior is expected to consult with the Secretary of Defense concerning the nature and extent of unexploded ordnance in the monument and conservation area, and the cost and feasibility of removing these materials or protecting the public from them.

Acquisitions

Section 502 The Secretary of the Interior is authorized to acquire lands and interests within the monument and conservation area. Lands owned by the State of New Mexico may be acquired only by exchange. The Congress expects acquisition of subsurface interests to be completed within 3 years.

(Senate and House Reports) Authority to acquire lands and minerals may extend beyond 3 years. Indian trust lands may not be condemned, and Indian lands should only be acquired with the consent of the Indian owners.

State Exchanges

Section 503(a) Upon request by the State of New Mexico, the Secretary is required to exchange state land within the monument or conservation area for equal value parcels elsewhere in the state.

Section 503(b) Within 6 months, the Secretary will identify for the State Land Commissioner those state lands within the monument and conservation area and those federal lands that are available for transfer to the State of New Mexico in exchange. Such listing is to be updated annually. The Congress expects the land exchanges to be completed within 2 years.

(Senate and House Reports) Authority for state exchange may extend beyond 2 years.

Mineral Exchanges

Section 504 The Secretary is directed to exchange approximately 15,000 acres of federal mineral rights identified in the act for approximately 15,000 acres of mineral rights owned by Santa Fe Pacific Industries within the conservation area. Such exchange is to be on the basis of equal value, consistent with FLPMA, and the Secretary must determine that the exchange is in the public interest. The exchange is to be completed within 3 years.

(Senate and House Reports)	Authority for the exchange may extend beyond 3 years.
(House Report)	The Committee believes that this exchange is in the public interest and intends these provisions to facilitate the exchange, consistent with FLPMA.

Acoma Pueblo Exchanges

Section 505 (Senate and House Reports)	Congress intends that the NPS and the BLM be sensitive to needs of Native American groups. Boundaries of the National Monument and Cebolla Wilderness were drawn specifically to allow continued road access to Acoma deeded land. Acoma grazing may continue for 10 years within the monument and indefinitely within the conservation area.
Section 505(a)	The Secretary is authorized, at the request of Acoma Pueblo, to exchange certain lands within the conservation area or other lands of equal value outside the conservation area for Acoma trust lands west of NM State Road 117. Lands exchanged to the Acoma shall be held in trust while the acquired lands will be incorporated into the monument.
Section 505(b)	Consistent with law and existing land use plans, BLM lands within New Mexico shall be available for exchange.
Section 505(c)	Certain identified lands within the conservation area are available for exchange, provided Acoma Pueblo requests exchange within 1 year. Otherwise these public lands are incorporated into the conservation area and certain areas will be included in the Cebolla Wilderness.
(Senate Report)	The NPS and the BLM should pursue exchanges before purchasing these lands. All lands within the conservation area need not be consolidated into federal ownership. Power of condemnation will be used to acquire lands in the conservation area only where there is an imminent threat to the purposes for which the conservation area was established. Both agencies should work cooperatively with private land owners and range users to minimize construction of permanent fences and to maintain existing access to private property, where possible.
(House Report)	The 1-year deadline for the Acoma exchange involving conservation area lands is intended to minimize potential interference with proper management of the conservation area and wilderness. Additional proposals for transfer of lands in these areas to the Pueblo of Acoma are not considered necessary or desirable.

Exchanges and Acquisitions Generally; Withdrawal

Section 506(a)	Generally, exchanges should be on the basis of equal value. However, the Secretary may make exceptions if they are in the public interest.
Section 506(b)	"Public Lands" has the same meaning as in FLPMA.
Section 506(c)	Lands or interests acquired within the monument or conservation area after enactment of this legislation shall be incorporated into the monument or conservation area.
Section 506(d)	No federal lands within the monument or conservation area shall be transferred out of federal ownership or placed in trust, except as provided for in this act. Subject to valid existing rights, federal lands within the monument and conservation area are withdrawn from all forms of entry, appropriation, or disposal and from location, entry, and patent under the mining laws. They are closed to mineral and geothermal leasing.
Section 506(e)	Acreages in the act are approximate; referenced maps take precedence over acreage figures.
Section 506(f)	The Secretary is authorized to accept land contiguous to Pecos National Monument by donation.

Section 506(g) Capulin Mountain National Monument is redesignated Capulin Volcano National Monument, and other administrative details of records and boundaries of this monument are enacted.

Access

Section 507(a) The Secretary is required to permit access for continued traditional cultural and religious use of the monument and conservation area by Native Americans.

Section 507(b) The Secretary shall request the recommendations of Acoma Pueblo and other Indian tribes about methods of ensuring access, enhancing the privacy of traditional cultural and religious activities, and protecting traditional cultural and religious sites.

Section 507(c) The Secretary may temporarily close to public use specific, limited portions of the conservation area and monument to protect the privacy of the religious activities of Indian people. Written notification of such action must be provided to the Energy and Natural Resources Committee of the Senate, and to the Interior and Insular Affairs Committee of the House, within 7 days after initiation of any such closure.

Section 507(d) An advisory committee including representatives of Acoma, Zuni, other appropriate Indian tribes and other persons or groups may be established to advise the Secretary on these matters.

(Senate and House Reports) The Secretary must consult appropriate Indian tribes and their traditional cultural and religious authorities during preparation of the General Management Plans to determine what the traditional cultural and religious uses have been.

Cooperation

Section 508 The Secretary is authorized and encouraged to cooperate with other agencies and groups to further the interpretation of prehistoric civilizations of New Mexico and eastern Arizona. Specifically, the Secretary is encouraged to cooperate in development of a multi-agency orientation center near Grants, New Mexico.

Water Rights

Section 509 Water rights are reserved for the minimum amount of water needed to carry out the purposes for which the monument, conservation area, and wildernesses were established. This clause shall not affect any existing water right or pending application, and this subsection does not require the NPS to drill wells. Nothing in this action establishes a precedent with regard to future designations, nor does it affect interpretation of any other act or designation.

(Senate Report) The Committee reiterates that reservation of water applies only to this act and should have no bearing on interpretation of any other reserved rights doctrine. The water rights reservation is junior to those of all existing wells and pending applications. No conflicts are anticipated between the federal government's need for water and any valid existing or pending rights.

Authorization

Section 510 This section authorizes $16.5 million for purposes of the act: $10 million for land acquisition in the monument, $1 million for development in the monument, $4 million for land acquisition in the conservation area, $1 million for development in the conservation area, and $500,000 for planning and developing the Masau Trail.

APPENDIX B

BLM Management Actions Since Establishment of the El Malpais NCA (1986)

APPENDIX B

BLM MANAGEMENT ACTIONS SINCE ESTABLISHMENT OF THE EL MALPAIS NCA (1987)

Action*	Completion Date(s)
Established staff for NCA; opened temporary information center w/National Park Service (NPS) in Grants.	1988
Established volunteer program to assist w/projects, provide visitor services & help staff information center.	1987
Completed exchanges w/State of New Mexico, New Mexico & Arizona Land Co., & Cerrillos Land Co. to acquire 193,697 acres of mineral estate w/in NCA & National Monument.	1987-90
Completed Land Protection Plan for NCA to guide public realty actions.	1989
Acquired 13,400 acres of surface estate w/in NCA & wilderness by exchange, purchase or donation, plus 14,000 acres contiguous to NCA & Cebolla Wilderness.	1989-94
Inventoried 40,160 acres for cultural resources @ Class II level.	1990
Issued right-of-way to Continental Divide Electric for transmission line to Ranger Station.	1990
Inventoried 320 acres of Cebolla Canyon Prehistoric Community for cultural resources @ Class III level.	1990
Designed, constructed & opened Ranger Station.	1991
Established agreement w/Southwest Natural & Cultural Heritage Association to provide & sell publications @ Ranger Station.	1991
Produced informational video on NCA & published El Malpais Recreation Guide Map.	1991
Inventoried 4,000 acres of Cerritos de Jaspe Unit for cultural resources @ Class II level.	1991
Inventoried & recorded 21 historic homestead sites.	1991
Installed monitoring station; collected air quality, meteorology & soil data as part of Intermountain Wilderness Area Ecosystem Study.	1991-96
Developed Range Improvement Maintenance Plans for Cebolla Wilderness & West Malpais Wilderness.	1991
Completed 5-year intensive monitoring of six I-category (Improve) grazing allotments in NCA.	1991
Completed ecological site inventory on Techado Mesa & Los Pilares grazing allotments.	1991
Reclassified Bright's Well Allotment from M (Maintain) to C (Custodial) category.	1991

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APPENDIX B (concl'd)

Action [a]	Completion Date(s)
Developed & paved La Ventana Natural Arch parking lot, installed portable toilets & improved trail.	1988-91
Fenced five historic homesteads.	1991-93
Issued joint decision w/U.S. Forest Service (USFS) on location of Continental Divide National Scenic Trail.	1992
Inventoried 760 acres of Armijo Canyon Prehistoric Community for cultural resources @ Class III level.	1992
Completed site stabilization project @ Armijo Canyon Homestead & Springhouse.	1992
Issued grazing decisions for six I-category allotments.	1992
Maintained 48 miles of roads in NCA.	1992-93
Designed & developed interpretive displays for Ranger Station.	1993
Completed brochures for West Malpais Wilderness & Chain of Craters Back Country Byway; dedicated byway.	1993
Completed stabilization project @ Dittert Site.	1993
Issued right-of-way to USFS for portion of FS Road #50.	1993
Completed management plans for Techado Mesa & Los Pilares grazing allotments.	1993
Developed Limits of Acceptable Change (LAC) standards for recreation & wilderness.	1993
Constructed protective riparian pasture @ Cebolla Spring w/assistance from students at Southwestern Indian Polytechnic Institute.	1994
Installed vault toilets @ La Ventana Natural Arch.	1995
Completed emergency stabilization project @ Stone House in Cebolla Canyon.	1995
Issued commercial recreation permits to South Mountain Wilderness Tours & Curt Farmer Pack Llamas, who may conduct day & overnight hiking, mule or llama treks w/in NCA.	1995
Los Amigos del Malpais built two wilderness barricades, maintained trail @ La Ventana Natural Arch, & planted demonstration garden @ Ranger Station.	1995

Note: [a] Many of these actions were completed with significant help from Los Amigos del Malpais and other volunteer organizations. Further information is available at the Albuquerque Field Office.

APPENDIX C

RECREATION OPPORTUNITY SPECTRUM

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APPENDIX C

RECREATION OPPORTUNITY SPECTRUM

INTRODUCTION

The goal of the recreationist is to have satisfying leisure experiences by participating in preferred activities in favorable environmental settings. Opportunities for achieving satisfying experiences depend on natural elements such as vegetation, landscape and scenery, and conditions controlled by land-management agencies, such as developed sites, roads and regulations. The goal of the recreation resource manager then becomes to provide the opportunities to obtain such experiences by managing the natural setting and the activities within it.

The Recreation Opportunity Spectrum (ROS) is the BLM's framework to inventory, plan and manage recreational opportunities. The ROS is divided into six classes, ranging from essentially natural, low-use areas (resource-dependent recreational opportunities) to highly developed, intensive use areas (facility/vehicle-dependent recreational opportunities). Each class is defined in terms of three principal components: the environmental setting, the activities possible, and the experiences that can be achieved.

The primary factor in determining ROS classes is the setting. This describes the overall outdoor environment in which activities occur, influences the types of activities, and ultimately determines the types of recreation that can be achieved.

Activities are not completely dependent on opportunity class, and most can take place in some form throughout the spectrum. However, general activities can be characterized for each ROS class. For each person, her/his recreational experience depends on the environmental setting and individual differences based on background, education, sex, age and place of residence.

RECREATION OPPORTUNITY SETTINGS

The ROS encompasses a variety of recreational settings under which certain experiences are possible. Seven elements provide the basis to inventory and delineate recreational settings. These are: access, remoteness, naturalness, facility and site management, visitor management, social encounters, and visitor impacts.

Access--Includes the mode of travel used within the area and influences both the level and type of recreational use an area receives.

Remoteness--Concerns the extent to which individuals perceive themselves removed from human activity. Vegetation or topographic variation can increase this sense of remoteness. Lack of remoteness is important for some recreational experiences.

Naturalness--Concerns the varying degrees of human modification of the environment. Often described in terms of scenic quality influenced by the degree of alteration of the natural landscape.

Site Management--Refers to the level of site development. Lack of site modifications can facilitate feelings of self-reliance and naturalness, while highly developed facilities can enhance comfort and increase the opportunity to meet and interact with others.

Visitor Management--Includes both regulation and control of visitors as well as providing them with information and services. A continuum of visitor management can be described, ranging from subtle techniques such as site design, to strict rules and regulations. In some recreational settings controls are expected and appropriate; in others, onsite controls detract from the desired experience.

Social Encounters--Involve the number and type of others met in the recreation area. Also measures the extent to which an area provides experiences for solitude or social interaction.

Visitor Impacts--Affect natural resources such as soil, vegetation, air, water and wildlife. Even low levels of use can produce significant ecological impacts, and these impacts can influence the visitor's experience.

RECREATION OPPORTUNITY CLASSES

Based on the seven elements described above, six recreation opportunity classes have been developed and are described below. Reclassification of lands can occur in response to alternative management prescriptions.

Primitive

This setting is characterized by a large-sized area of about 5,000 acres or more, lying at least 3 miles from the nearest point of motor vehicle access. It is essentially an unmodified natural landscape, with little evidence of others and almost no onsite management controls. Activities include overnight backpack camping, nature study and photography, backcountry hunting, horseback riding, and hiking. The experience provides visitors with a chance to achieve solitude and isolation from human civilization, feel close to nature, and encounter a greater degree of personal risk and challenge.

Semi-Primitive Nonmotorized

This setting consists of about 2,500 acres lying at least ½ mile from the nearest point of motor vehicle access. The area is predominantly a natural landscape. Where there is evidence of others, interaction is low, and few management controls exist. Activities include backpack camping, nature viewing, backcountry hunting (big game, small game, and upland birds), climbing, hiking, and cross-county skiing. The experience provides for minimal contact with others, a high degree of interaction with nature and a great deal of personal risk and challenge.

Semi-Primitive Motorized

This setting consists of about 2,500 acres within ½ mile of primitive roads and two-track vehicle trails. The area has a mostly natural landscape with some evidence of others (but numbers and frequency of contact seem to remain low) and few management controls. Activities include hunting, climbing, vehicle trail riding, back-country driving, mountain biking, hiking, and snowmobiling. The experience provides for isolation from human civilization, a high degree of interaction with the natural environment and a moderate degree of personal risk and challenge.

Roaded Natural

This setting consists of areas near improved and maintained roads. While these areas are mostly natural in appearance, some human modifications are evident, with moderate numbers of people, visible management controls and developments. Activities include wood gathering, downhill skiing, fishing, off-highway vehicle driving, interpretive uses, picnicking, and vehicle camping. The experience provides for a sense of security through the moderate number of visitors and developments, some personal risk-taking and challenges.

Rural

This setting is characterized by a substantially modified natural environment. Resource modification, development and use are obvious. Human presence is readily evident, and interaction between users is often moderate to high. Activities consist mostly of facility/vehicle-dependent recreation and generally include vehicle sightseeing, horseback riding, on-road biking, golf, swimming, picnicking, and outdoor games. The experience provides for modern visitor conveniences, moderate to high levels of interactions with others, and a feeling of security from personal risk.

Urban

This setting consists of areas near paved highways, where the natural landscape is dominated by human modifications. Large numbers of users can be expected. Sights and sounds of others dominate, while management controls are numerous. Activities are facility/vehicle-dependent and include concerts, wave pools, amusement parks, zoos, vehicle racing facilities, spectator sports and indoor games. The experience provides for numerous modern conveniences, large numbers of people, interaction with an exotic and manicured environment, and a feeling of high personal security.

MANAGEMENT OBJECTIVES FOR ROS CLASSES

Objectives for a specific class contain minimum guidelines and standards as well as directions concerning the type of activities, physical and social settings, and recreational opportunities to be managed for.

Primitive

The primitive class is managed to be essentially free from evidence of humans and onsite controls. Motor vehicle use within the area is not permitted. The area is managed to maintain an extremely high probability of experiencing isolation from others (not more than three to six encounters per day) and little to no managerial contact. Independence, closeness to nature, self-reliance and an environment that offers a high degree of challenge and risk characterize this class. Back-country use and management of renewable resources is subject to the protection of back-country recreational values.

Semi-Primitive Nonmotorized

Semi-primitive nonmotorized areas are managed to be largely free from the evidence of humans and onsite controls. Motor vehicle use is not permitted (except as authorized). Facilities for the administration of livestock and for visitor use are allowed but limited. Project designs stress the protection of natural values and maintenance of the predominantly natural environment. Areas are managed to maintain a good probability of experiencing minimum contact with others, self-reliance through the application of back- country skills, and an environment that offers a high degree of risk and challenge.

Back-country use and management of renewable resources are dependent on maintaining naturally occurring ecosystems. The consumption of renewable resources is subject to the protection of back-country recreational values.

Semi-Primitive Motorized

These areas are managed to provide a natural-appearing environment. Evidence of humans and management controls are present but subtle.

Motor vehicle use is allowed, but the concentration of users should be low. Onsite interpretive facilities, low-standard roads and trails, trailheads, and signs should stress the natural environment and be the minimum necessary to achieve objectives.

The consumption of natural resources is allowed. Effort is taken to reduce the impact of utility corridors, rights-of-way, and other surface- disturbing projects on the natural environment. Frequency of managerial contact with visitors is low to moderate.

Roaded Natural

Roaded natural areas are managed to provide a natural appearing environment with moderate evidence of humans. Motor vehicle use is permitted and facilities for this use are provided. Concentration of users is moderate with evidence of others prevalent. Resource modification and use practices are evident but harmonize with the natural environment.

Placement of rights-of-way, utility corridors, management facilities, and other surface-disturbing activities would be favored here over placement in semi-primitive nonmotorized and semi-primitive motorized areas. The consumption of natural resources is allowed except at developed trailheads, developed recreational areas and sites, and where geological, cultural, or natural interests prevail. Frequency of managerial contact with visitors is moderate.

Rural

Rural areas are managed to provide a setting that is substantially modified with moderate to high evidence of civilization. Motor vehicle use is permitted. Concentration of users is often high with substantial evidence of others. Resource modification and use practices are mostly dominant in a somewhat manicured environment. Standards for road, highway, and facility development are high for user convenience. Frequency of managerial contact with visitors is moderate to high.

Urban

Urban areas are managed to provide a setting that is largely modified. Large numbers of users can be expected, and vegetation cover is often exotic and manicured. Facilities for highly intensified motor vehicle use and parking are available, with mass transit often included to carry people throughout the site. The probability for encountering other individuals and groups is prevalent, as is the convenience of recreational opportunities. Experiencing natural environments and their challenges and risks is relatively unimportant. Opportunities for competitive and spectator sports are common.

APPENDIX D

LIMITS OF ACCEPTABLE CHANGE

APPENDIX D

LIMITS OF ACCEPTABLE CHANGE

INTRODUCTION

As developed by George Stankey and others (1985), using Limits of Acceptable Change (LAC) is a process that requires deciding what kinds of conditions are acceptable in recreational settings, then prescribing actions to protect or achieve those conditions. The objective of the LAC system is not to prevent change but rather to control it, and to decide what management actions are required to maintain or enhance the desired conditions.

The LAC process consists of four major components: (1) specifying acceptable and achievable resource and social conditions, defined by a series of measurable parameters, (2) analyzing of the relationships between existing conditions and those judged acceptable, (3) identifying management actions necessary to achieve these conditions, and (4) a program of monitoring and evaluating management effectiveness. These four components are broken down into nine steps to ease application. Each of the nine steps is designed to achieve a particular task and provide the basis for later activities.

By following the LAC process, manager with public input identify issues and concerns that need to be resolved through the land use planning and environmental assessment processes. First they define opportunity classes, select resource and social indicators, and inventory the planning area to determine current indicator status. After this inventory, managers specify standards for the indicators within each opportunity class. The management actions needed to maintain resource and social indicators within these standards are written as prescriptions. (These may vary by alternative.) The final phase involves monitoring the indicators and comparing the results against previous measurements and acceptable standards to see if the objectives are being achieved or maintained to the desired standard. Unacceptable change signals the need for corrective management action.

THE ROLE OF OPPORTUNITY CLASSES

When an area contains a diversity of physical and biological features and uses, subdivisions or opportunity classes can be applied. Within diversified areas, the type of management needed is expected to vary throughout. Opportunity classes delineate zones where different resources, social and managerial conditions will be maintained. Map D displays the four opportunity classes set for the El Malpais National Conservation Area in 1993.

THE ROLE OF INDICATORS

BLM managers will monitor how much change is occurring in the El Malpais NCA. They will need to look at the indicators, which are specific elements of the NCA setting that change in response to human activities.

Indicators provide quantitative documentation on how much conditions have changed, serve as tools to examine trends and highlight problems, and can act as an early warning to predict future conditions. When compared with standards that describe the acceptable limits of change, indicators can signal the need for corrective action, evaluate the effectiveness of management actions, and help determine if desired NCA conditions are being achieved.

Criteria For Indicator Selection

Quantitative--Can the indicator be measured?

Correlated--Does the indicator detect a change in conditions caused by humans?

Feasible--Can the indicator be measured using simple equipment and sampling techniques?

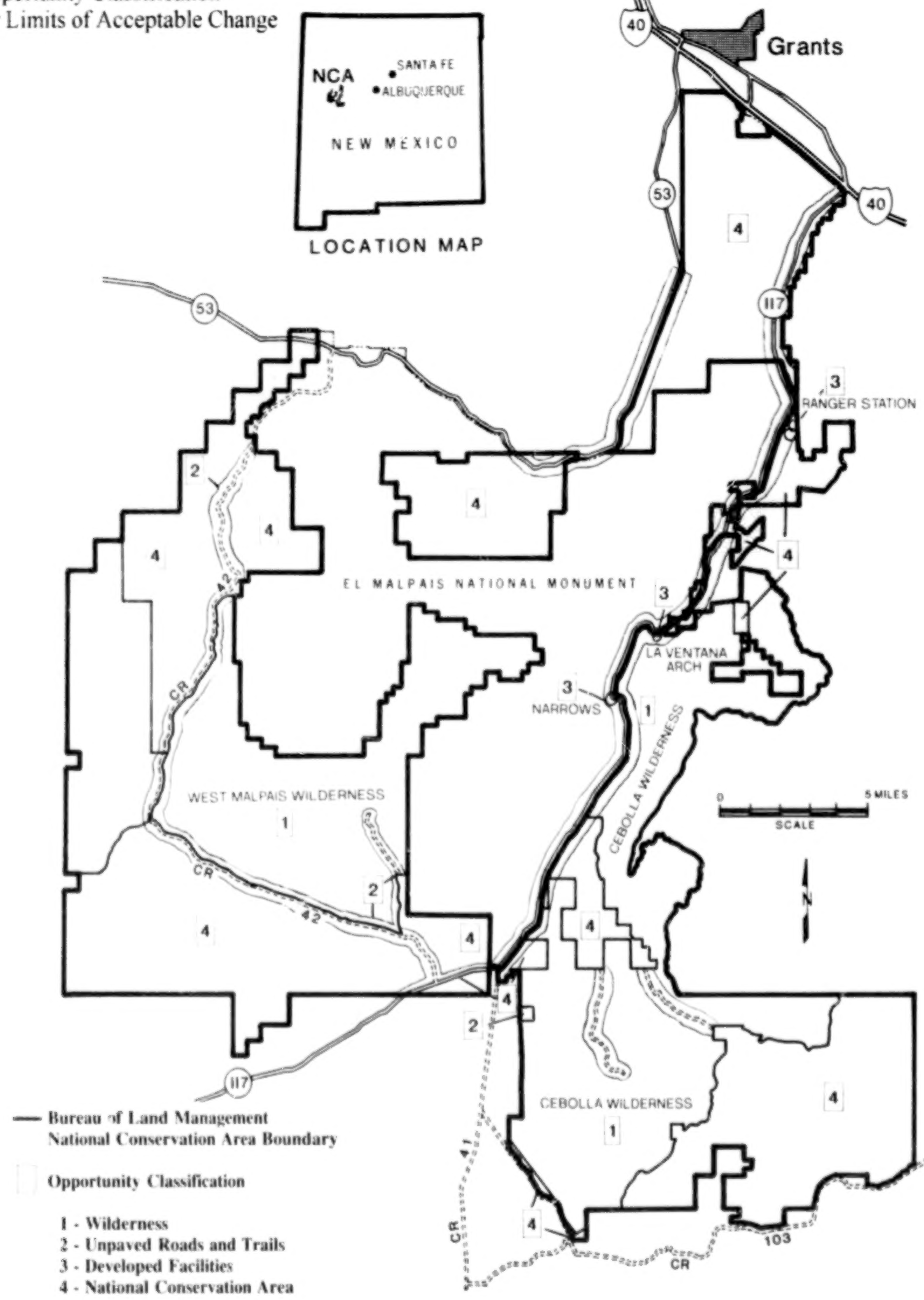
Reliable--Can the indicator be measured consistently (i.e., will different observers collect the same information)?

Responsive--Does the indicator detect a change in conditions in response to management control?

Sensitive--Can the indicator detect a change in conditions that occur within a year?

Map D

Opportunity Classification for Limits of Acceptable Change



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Integrated--Does the indicator reflect the conditions of more elements than itself?

Early Warning Ability--Does the indicator act as an early warning, alerting managers to deteriorating conditions before unacceptable changes have occurred?

Significance--Does the indicator detect a change in conditions that persist for a long time (e.g., 5 years), disrupts ecosystem functioning, or reduces the future desirability of the area for visitors, researchers, grazing allottees, and other NCA users?

THE ROLE OF STANDARDS

Standards provide a way to monitor existing and future conditions against those defined as acceptable. They establish (quantitatively, qualitatively, and judgmentally) the range of conditions or "limits of acceptable change" for each indicator.

WHY MONITOR?

The designation of an area as an NCA does not ensure that desired conditions will be protected, or opportunities will exist for visitors to obtain a positive recreational or wilderness experience. However, the desired NCA conditions for which the BLM strives and monitors include:

- Air quality maintained at levels that meet or exceed federal and state standards.
- Water quality maintained at levels that protect aquatic ecosystems, and drinking water free from fecal contamination.
- Wildlife and plant species in natural distributions and abundances
- Outstanding opportunities for diverse recreational experience within a natural setting.
- Outstanding opportunities in wilderness for solitude, challenge, self-reliance, primitive and unconfined recreation, and scientific study.
- Natural processes operating freely in wilderness.
- The imprint of human activities substantially unnoticeable in wilderness.

Various uses will inevitably cause some change in NCA conditions. Recreational use, transportation and trail systems, livestock grazing, fire suppression, exotic species introduction, air pollution, crowding, littering and excessive regulation all can threaten the values the NCA was designated to conserve. However, change does not necessarily have to be bad. Under careful observation, some existing conditions need to change to become acceptable.

Steps in a Monitoring Program

1. Describe the area's natural and human characteristics. Identify unique area attributes. Gather all available data.
2. Identify human activities that impact conditions. Identify issues and concerns.
3. Define goals and objectives that reflect the desired NCA conditions.
4. Select indicators of environmental and experiential conditions.
5. Describe sampling and measurement methods for each indicator.
6. Specify standards for acceptable limits of change for each indicator.
7. Inventory indicator conditions and compare with standards.
8. Identify management actions in areas where conditions need to be brought up to standard.

NCA Monitoring Forms

The El Malpais NCA has been divided into four opportunity classes, as shown on Map D. Within each class, key monitoring locations have been identified. A standard form has been developed for each class to ensure consistency of data and decrease subjectivity. The following forms used for data collection show selected indicators, standards, sampling methods for collecting information, monitoring locations, and corrective actions to be taken when standards are exceeded for each opportunity class.

TABLE D-1

REVISED 6/95

I EL MALPAIS NATIONAL CONSERVATION AREA--LIMITS OF ACCEPTABLE CHANGE

ELEMENT	MONITORING LOCATIONS	INDICATORS	STANDARDS	VISUAL MONITORING	PHOTO-MONITORING	ACTIONS (based on present condition)	OBSERVER RECOMMENDATIONS
Opportunity Classification I Wilderness Unmodified natural environment, surface disturbance small; trails acceptable; no motorized vehicles; no facilities for user convenience; little evidence of previous recreation use. Compare with baseline photos & data (observations)	Proposed Narrows Rim Trail (Cebolla Wilderness) Armijo Canyon (Cebolla Wilderness) Homestead Canyon (Cebolla Wilderness)	Number/distribution of campsites	≤2 campsites visible within 300 feet of each campsite	Establish baseline data collection Visual observation of 100% for each site, 1 time/year Once during high-use period, May-September or hunting season	Establish baseline inventory photos Establish 1 photo point/site where standard was exceeded Photo-monitor sites 1 time/year	Use "Leave No Trace" ethics Increase patrols Increase interpretive effort using brochures, guided tours Sign trailheads & access points outside wilderness boundary Restrict areas for rehabilitation Remove undesired fire rings Collect trash	Date: Time: Observer:
		Fire-ring density	One fire-ring/campsite				
		Number of encounters with other groups/day	80% probability during all use periods of <3 other groups encountered/day while traveling along trails				
		Group size	80% probability during all use periods of <6 persons/group encountered/day while traveling along trails				
		Number of unauthorized trails (leading to Narrows Rim Trail)	2 distinct trails from designated trail (leading to Narrows Rim Trail)				
		Vegetative loss	Bare mineral soil ≤100 sq. ft. at desired campsites				
		Trail erosion	Location of erosion or gullying ≤1 ft. /¼ mile				

TABLE D-2

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II EL MALPAIS NATIONAL CONSERVATION AREA--LIMITS OF ACCEPTABLE CHANGE

ELEMENT	MONITORING LOCATIONS	INDICATORS	STANDARDS	VISUAL MONITORING	PHOTO-MONITORING	ACTIONS (based on present condition)	OBSERVER RECOMMENDATIONS
Opportunity Classification II Unpaved roads & trails Frequency of contact is low to moderate on unpaved roads & trails; primitive roads & motorized use are present; small isolated structures may be present; surface disturbance is limited & small. Compare with baseline photos & data (observations)	Hole-in-the-Wall Cherry-Stemmed Road & Trailhead Dittert Site & Trailhead CR 42	Unauthorized trails	2 distinct trails from designated trail	Establish baseline data collection Visual observation of 100% for each site, 1 time/year Once during high-use period, May-September or hunting season	Establish baseline inventory photos Establish 1 photo point/site where standard was exceeded Photo-monitor sites 1 time/year	Use "Leave No Trace" ethics & interpretive programs Increase BLM patrols Increase signing Law enforcement actions Restrict areas for rehabilitation Contact County Highway Department for road maintenance (CR 42) Notify public at Ranger Station & Grants Field Station on road conditions for CR 42	Date: Time: Observer:
		Number of complaints concerning road or trail conditions	≤10 complaints /year				
		Road conditions presenting safety hazard (potholes, ruts)	Seasonally monitor road conditions annually				
		Damage to ROW, poor weather conditions	Notify County Highway Department for maintenance (CR 42)				

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TABLE D-3

REVISED 6/95

III EL MALPAIS NATIONAL CONSERVATION AREA--LIMITS OF ACCEPTABLE CHANGE

ELEMENT	MONITORING LOCATIONS	INDICATORS	STANDARDS	VISUAL MONITORING	PHOTO-MONITORING	ACTIONS (based on present condition)	OBSERVER RECOMMENDATIONS
Opportunity Classification III Developed facilities Developed recreational facilities; facilities available for user convenience; frequency of contact is moderate to high in developed sites & on roads & trails; onsite controls obvious & numerous. Compare with baseline photos & data (observations)	Trail at La Ventana Natural Arch Narrows Picnic Area	Trail width	Width ≤12 inches over design trend	Establish baseline inventory data collection Visual observation of 10% for each facility, 3 times /year 3 times during high-use period, May-September or hunting season	Establish baseline inventory photos Establish 1 photo point/site where standard was exceeded Photo-monitor sites 1 time/year	Use "Leave No Trace" ethics & interpretive programs Increase BLM patrols Establish "Public Land Watch" Program Increase signing Rehabilitate area or restrict areas for rehabilitation Law enforcement actions Issue permits for visitor use or reservations for Ranger Station programs Keep records/data of vandalism	Date: Time: Observer:
		Trail erosion	2 locations of erosion or gullying ≤1 ft./¼ mi.				
		Unauthorized trails	2 distinct trails from designated trail				
		Number of incidents of vandalism	≤5 incidents of vandalism/facility				
		Vegetation trampled or disturbed that does not recover annually	≤25% vegetation trampled or disturbed when compared with adjacent undisturbed area				

TABLE D-4

REVISED 6/95

IV	EL MALPAIS NATIONAL CONSERVATION AREA--LIMITS OF ACCEPTABLE CHANGE						
ELEMENT	**MONITORING LOCATIONS**	**INDICATORS**	**STANDARDS**	**VISUAL MONITORING**	**PHOTO-MONITORING**	**ACTIONS (based on present condition)**	**OBSERVER RECOMMENDATIONS**
Opportunity Classification IV National Conservation Area Facilities for user safety & resource protection; limited evidence of previous recreation use; low to moderate frequency of contact; primitive roads & motorized use are present. Compare with baseline photos & data (observations)	Sand Canyon Road Chain of Craters WSA (Cerro Piedrita, Cerro Lobo, Cerro Chato) Cerro Rendija	Number of pieces of trash	≤25 pieces of trash/location	Establish baseline data collection Visual observation of each site, minimum 1 time/year Once during high-use period, May-September or hunting season	Establish baseline inventory photos Establish 1 photo point/site where standard was exceeded Photo-monitor sites 1 time/year	Use "Leave No Trace" ethics & interpretive programs Increase BLM patrols Law enforcement action Restrict areas for rehabilitation or repair Operation Respect during hunting season	Date: Time: Observer:
		Number/distribution of campsites	≤3 campsites visible within 300 ft. of each campsite				
		Number of unauthorized roads	≤2 distinct unauthorized roads from designated road in BLM road inventory				
		Vegetative loss	Base mineral soil ≤400 sq. ft. at established campsites				

APPENDIX E

VISUAL RESOURCE MANAGEMENT CLASSES & OBJECTIVES

APPENDIX E

VISUAL RESOURCE MANAGEMENT CLASSES AND OBJECTIVES

The overall objective of Visual Resource Management (VRM) is to manage public lands administered by the Bureau of Land Management (BLM) in a manner that will protect the quality of the visual (scenic) values in accordance with Section 102(a)(8) of the Federal Land Policy and Management Act of 1976. The VRM system uses a methodical approach to inventory and manage the scenic resources of the public lands. It provides a way to identify visual (scenic) values, to establish management objectives through the Resource Management Planning process or on a case-by-case basis, and to provide timely input into proposed surface-disturbing projects.

The visual resource inventory process (BLM Manual H-8410-1) provides the BLM with a means of determining visual values. The inventory consists of a scenic quality evaluation, a sensitivity level analysis, and a delineation of distance zones. Based on these factors, BLM-administered lands are placed into one of four VRM classes.

Class I, the most highly valued, is assigned to those areas where decisions have been made to maintain a natural landscape. This includes areas such as national wilderness, the wild component of a Wild and Scenic River, scenic Areas of Critical Environmental Concern, and other congressionally and administratively designated areas.

Classes II, III, and IV are assigned based on a combination of scenic quality, sensitivity level, and distance. The specific VRM class objectives provide the standards for planning, designing and evaluating actions.

The Visual Contrast Rating System (Manual Section 8431) provides a methodical way to evaluate activities and determine whether they conform with the approved VRM objectives. The degree of contrast is measured in terms of the basic elements of form, line, color, and texture in the predominant natural features of the characteristic landscape.

The VRM classes and their management objectives are as follows.

Class I. To preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II. To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must mimic the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III. To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should mimic the basic elements found in the predominant natural features of the characteristic landscape.

Class IV. To provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be a major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements.

WILDLIFE SPECIES KNOWN OR POTENTIALLY OCCURRING WITHIN CIBOLA COUNTY (EL MALPAIS PLANNING AREA)

APPENDIX F

APPENDIX F

WILDLIFE SPECIES KNOWN OR POTENTIALLY OCCURRING WITHIN CIBOLA COUNTY (EL MALPAIS PLANNING AREA)

Common Name	Scientific Name	Status [a]
Mammals		
Abert's squirrel	Sciurus aberti	
badger	Taxidea taxus	
banner-tailed kangaroo rat	Dipodomys spectabilis	
big brown bat	Eptesicus fuscus	
big free-tailed bat	Nyctinomops macrotis	SC/BS
black bear	Ursus americanus	
black-footed ferret	Mustela nigripes	FE
black-tailed jack rabbit	Lepus californicus	
bobcat	Lynx rufus	
Botta's pocket gopher	Thomomys bottae	
brush mouse	Peromyscus boylii	
Cebolleta southern pocket gopher	Thomomys umbrinus paquatae	SC/BS
cliff chipmunk	Eutamias dorsalis	
Colorado chipmunk	Eutamias quadrivattatus	
coyote	Canis latrans	
deer mouse	Peromyscus manicalatus	
desert cottontail	Sylvilagus audubonii	
Eastern cottontail	Sylvilagus floridanus	
elk	Cervus elphus	
fringed myotis	Myotis thysanodes	SC/BS
gray fox	Urocyon cinereoargenteus	
Gunnison's prairie dog	Cynomys gunnisoni	
hoary bat	Lasiurus cinereus	
long-eared myotis	Myotis evotis	SC/BS
long-legged myotis	Myotis volans	SC/BS
meadow vole	Microtus pennsylvanicus	
Mexican free-tailed bat	Tadarida brasiliensis	
Mexican woodrat	Neotoma mexicana	
mountain lion	Felis concolor	
mule deer	Odocoileus hemionus	
Northern grasshopper mouse	Onychomys leucogaster	
occult little brown bat	Myotis lucifugus occultus	SC/BS
Ord's kangaroo rat	Dipodomys ordii	
pallid bat	Antrozous pallidus	
piñon mouse	Peromyscus truei	
porcupine	Erethizon dorsatum	
Plains pocket mouse	Perognathus flavescens	
pronghorn antelope	Antilocapra americana	
raccoon	Procyon lotor	
red squirrel	Tamiasciurus hudsonicus	
ringtail	Bassaricus astutus	
rock mouse	Peromyscus difficilis	
rock squirrel	Spermophilus variegatus	
silky pocket mouse	Perognathus flavus	
silver-haired bat	Lasionycteris noctivagans	

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Common Name	Scientific Name	Status [a]
Mammals, concl'd		
small-footed myotis	Myotis ciliolabrum	SC/BS
Southern Plains woodrat	Neotoma micropus	
spotted bat	Euderma maculatum	SC/BS/ST
spotted ground squirrel	Spermophilus spilosoma	
spotted skunk	Spilogale gracilis	
Stephen's woodrat	Neotoma stephensi	
striped skunk	Mephitis mephitis	
Western pipistrelle	Pipistrellus hesperus	
Western harvest mouse	Reithrodontomys megalotis	
white-throated woodrat	Neotoma albigula	
Yuma myotis	Myotis yumanensis	SC/BS
Birds		
American avocet	Recurvirostra americana	
American bittern	Botaurus lentiginosus	
American coot	Fulica americana	
American crow	Corvus brachyrhynchos	
American kestrel	Falco sparverius	
American peregrine falcon	Falco peregrinus anatum	FE/SE
American robin	Turdus migratorius	
American wigeon	Anas americana	
acorn woodpecker	Melanerpes formicivorus	
Arctic peregrine falcon	Falco peregrinus tundrius	FT
ash-throated flycatcher	Myiarchus cinerascens	
bald eagle	Haliaeetus leucocephalus	FT/ST
band-tailed pigeon	Columba fasciata	
bank swallow	Riparia riparia	
barn owl	Tyto alba	
barn swallow	Hirundo rustica	
belted kingfisher	Ceryle alcyon	
Bendire's thrasher	Toxostoma bendirei	
Bewick's wren	Thryomanes bewickii	
black-billed magpie	Pica pica	
black-chinned hummingbird	Archilochus alexandri	
black-headed grosbeak	Pheucticus melanocephalus	
black-throated gray warbler	Dendroica nigriscens	
black-throated sparrow	Amphispiza bilineata	
blue-gray gnatcatcher	Polioptila caerulea	
blue-winged teal	Anas discors	
Brewer's blackbird	Euphagus cyanocephalus	
Brewer's sparrow	Spizella breweri	
broad-tailed hummingbird	Selasphorus platycercus	
brown creeper	Certhia americana	
brown-headed cowbird	Molothrus ater	
bufflehead	Bucephala albeola	
Bullock's oriole	Icterus bullockii	
burrowing owl	Athene cunicularia gypugea	SC/BS
bushtit	Psaltriparus minimus	
canvasback	Aythya valisineria	

Common Name	Scientific Name	Status[a]
Birds, cont'd		
canyon towhee	Pipilo fuscus	
canyon wren	Catherpes mexicanus	
Cassin's finch	Carpodacus cassinii	
Cassin's kingbird	Tyrannus vociferans	
Cassin's sparrow	Aimophila cassinii	
Chihuahuan raven	Corvus cryptoleucus	
chipping sparrow	Spizella passerina	
cinnamon teal	Anas cyanoptera	
Clark's nutcracker	Nucifraga columbiana	
cliff swallow	Hirudo pyrrhonota	
common goldeneye	Bucephala clangula	
common nighthawk	Chordeiles minor	
common poorwill	Phalaenoptilus nuttallii	
common raven	Corvus corax	
common snipe	Gallinago gallinago	
common yellowthroat	Geothlypis trichas	
Coopers's hawk	Accipiter cooperii	
crissal thrasher	Toxostoma crissale	
curve-billed thrasher	Toxostoma curvirostre	
dark-eyed junco	Junco hyemalis	
downy woodpecker	Picoides pubescens	
dusky flycatcher	Empidonax oberholseri	
European starling	Sturnus vulgaris	
ferruginous hawk	Buteo regalis	SC/BS
flammulated owl	Otus flammeolus	
Gamble's quail	Callipepla gambelii	
gadwall	Anas strepera	
golden eagle	Aquila chrysaetos	
Grace's warbler	Dendroica gracaei	
gray-breasted jay (see Mexican jay)		
gray catbird	Dumatella carolinensis	
gray vireo	Vireo vicinior	ST
gray flycatcher	Empidonax wrightii	
great blue heron	Ardea herodias	
great horned owl	Bubo virginianus	
greater roadrunner	Geococcyx californianus	
green-tailed towhee	Pipilo chlorurus	
green-winged teal	Anas crecca	
Hammond's flycatcher	Empidonax hammondii	
hepatic tanager	Piranga flava	
hermit thrush	Catharus guttatus	
horned lark	Eremophila alpestris	
house finch	Carpodacus mexicanus	
house wren	Troglodytes aedon	
indigo bunting	Passerina cyanea	
killdeer	Charadrius vociferus	
ladder-backed woodpecker	Picoides scalaris	
lazuli bunting	Passerina amoena	
least sandpiper	Calidris minutilla	
lesser goldfinch	Carduelis psaltria	

Common Name	Scientific Name	Status [a]
Birds, cont'd		
lesser nighthawk	Chordeiles acutipennis	
Lewis' woodpecker	Melanerpes lewis	
loggerhead shrike	Lanius ludovicianus	SC/BS
long-eared owl	Asio otus	
MacGillivray's warbler	Oprornis tolmiei	
mallard	Anas platyrhynchos	
marsh wren	Cistothorus palustris	
merlin	Falco columbarius	
mountain bluebird	Sialia currucoides	
mountain chickadee	Parus gambeli	
mountain plover	Charadrius montanus	FC
mourning dove	Zenaida macroura	
Mexican jay (gray-breasted jay)	Aphelocoma ultramarina	
Mexican spotted owl	Strix occidentalis	FT
Northern flicker	Colaptes auratus	
Northern goshawk	Accipiter gentilis	SC/BS
Northern harrier	Circus cyaneus	
Northern mockingbird	Mimus polyglottos	
Northern oriole (see Bullock's oriole)		
Northern pygmy owl	Glaucidium gnoma	
Northern pintail	Anas acuta	
Northern rough-winged swallow	Stelgidopteryx serripennis	
Northern saw-whet owl	Aegolius acadicus	
Northern shoveler	Anas clypeata	
orange-crowned warbler	Vermivora celata	
phainopepla	Phainopepla nitens	
pine siskin	Carduelis pinus	
piñon jay	Gymnorhinus cyanocephalus	
plain titmouse	Parus inornatus	
prairie falcon	Falco mexicanus	
pygmy nuthatch	Sitta pygmaea	
red-breasted nuthatch	Sitta canadensis	
red crossbill	Loxia curvirostra	
red-tailed hawk	Buteo jamaicensis	
red-winged blackbird	Agelaius phoeniceus	
rock dove	Columba livia	
rock wren	Salpinctes obsoletus	
rough-legged hawk	Buteo lagopus	
ruby-crowned kinglet	Regulus calendula	
ruddy duck	Oxyura jamaicensis	
rufous-crowned sparrow	Aimophila ruficeps	
rufous hummingbird	Selasphorus rufus	
rufous-sided towhee (see spotted towhee)		
sage sparrow	Amphispiza belli	
sage thrasher	Oreoscoptes montanus	
savannah sparrow	Passerculus sandwichensis	
Say's phoebe	Sayornis saya	
scaled quail	Callipepla squamata	
Scott's oriole	Icterus parisorum	
scrub jay (see Western scrub jay)		

Common Name	Scientific Name	Status [a]
Birds, concl'd		
sharp-shinned hawk	Accipiter striatus	
snowy egret	Egretta thula	
solitary sandpiper	Tringa solitaria	
solitary vireo	Vireo solitarius	
song sparrow	Melospiza melodia	
sora rail	Porzana carolina	
Southwestern willow flycatcher	Empidonax traillii extimus	FE/ST
spotted sandpiper	Actitis macularia	
spotted towhee (rufous-sided towhee)	Pipilo maculatus (Pipilo erythrophthalmus)	
Steller's jay	Cyanocitta stelleri	
Swainson's hawk	Buteo swainsoni	
Townsend's solitaire	Myadestes townsendi	
Townsend's warbler	Dendroica townsendi	
turkey vulture	Cathartes aura	
vesper sparrow	Pooecetes gramineus	
Virginia rail	Rallus limicola	
Virginia's warbler	Vermivora virginiae	
warbling vireo	Vireo gilvus	
Western bluebird	Sialia mexicana	
Western kingbird	Tyrannus verticalis	
Western meadowlark	Sturnella neglecta	
Western screech owl	Otus kennicotti	
Western scrub-jay (scrub jay)	Aphelocoma californica (Aphelocoma coerulescens)	
Western tanager	Piranga ludoviciana	
Western wood-pewee	Contopus sordidulus	
whip-poor-will	Caprimulgus vociferus	
white-breasted nuthatch	Sitta carolinensis	
white-crowned sparrow	Zonotrichia leucophrys	
white-throated swift	Aeronautes saxatalis	
wild turkey	Meleagris gallopavo	
Williamson's sapsucker	Sphyrapicus thyroideus	
Wilson's phalarope	Phaleropus tricolor	
yellow-bellied sapsucker	Sphyrapicus varius	
yellow-breasted chat	Icteria virens	
yellow-headed blackbird	Xanthocephalus xanthocephalus	
yellow-rumped warbler	Dendroica coronata	
Fish		
Zuni bluehead sucker	Catostomus discobolus yarrowi	SC/BS/SE
Amphibians		
Great Plains toad	Bufo cognatus	
leopard frog	Rana pipiens	
red-spotted toad	Bufo punctatus	
tiger salamander	Ambystoma tigrinum	
Western spadefoot	Scaphiopus hammondi	
Woodhouse's toad	Bufo woodhousei	

Common Name	Scientific Name	Status [a]
Reptiles		
blackneck garter snake	Thamnophis cyrtopsis	
Chihuahua whiptail	Cnemidophorus exsanguis	
coachwhip	Masticophis flagellum	
collared lizard	Crotaphytus collaris	
desert stripped whipsnake	Masticophis taeniatus	
Eastern fence lizard	Sceloporus undulatus	
gopher snake	Pituophis catenifer	
Great Plains skink	Eumeces obsoletus	
longnose leopard lizard	Crotaphytus wislizenii	
lesser earless lizard	Holbrookia maculata	
many lined skink	Eumeces multivirgatus	
night snake	Hypsiglena torquata	
racer	Coluber constrictor	
short-horned lizard	Phrynosoma douglassi	
side blotched lizard	Uta stansburiana	
Texas horned lizard	Phrynosoma cornutum	SC/BS
tree lizard	Uta ornata	
Western bullsnake	Pituophis melanoleucus	
Western diamondback rattlesnake	Crotalus atrox	
Western garter snake	Thamnophis elegans	
Western rattlesnake	Crotalus viridis	

Notes: [a] Status Codes: FE [b] - Federal Endangered, FT [b] - Federal Threatened, FC [b] - Federal Candidate (Old Category 1 Species), SC [b] - Species of Concern (Old Category 2 Species), BS [c] - BLM Sensitive Species, SE [d] - State Endangered, ST [d] - State Threatened.

[b] USDI, FWS 1995.

[c] USDI, BLM 1996.

[d] NMDG&F 1996.

COMMON & SPECIAL-STATUS PLANT SPECIES (VASCULAR) KNOWN OR POTENTIALLY OCCURRING WITHIN CIBOLA COUNTY (EL MALPAIS PLANNING AREA)

APPENDIX G

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APPENDIX G

COMMON AND SPECIAL-STATUS PLANT SPECIES (VASCULAR) KNOWN OR POTENTIALLY OCCURRING WITHIN CIBOLA COUNTY (EL MALPAIS PLANNING AREA)[a, b]

Common Name	Scientific Name	Status[c]
GRASSES/FORBS		
Forbs		
Eaton's lip-fern	Cheilanthes eatonii	
slender lip-fern	Cheilanthes feei	
Fendler's lip-fern	Cheilanthes fendleri	
purple cliffbrake	Pellaea atropurpurea	
grass fern	Asplenium septentrionale	
maidenhair spleenwort	Asplenium trichomanes	
rockfern	Woodsia plummerae	
pussytoes	Antennaria plantaginifolia	
ragleaf bahia	Bahia dissecta	
horseweed	Conyza canadensis	
Acoma fleabane	Erigeron acomanus	SC/BS/SS
spreading fleabane	Erigeron divergens	
Zuni (rhizome) fleabane	Erigeron rhizomatus	FT/SE
fleabane	Erigeron vetensis	
white thoroughwort	Eupatorium herbaceum	
puzzle sunflower	Helianthus paradoxus	FC/SE
hairy goldenaster	Heterotheca villosa	
hawkweed	Hieracium fendleri	
white ragweed	Hymenopappus filifolius	
silver sunflower	Hymenoxys argentea	
Colorado rubberweed	Hymenoxys richardsonii	
white aster	Leucelene ericoides	
aster	Machaeranthera linearis	
spiny goldenweed	Machaeranthera pinnatifida	
Tahoka daisy	Machaeranthera tanacetifolia	
tailleaf pericome	Pericome caudata	
greenstem paperflower	Psilostrophe sparsiflora	
lavendar thistle	Cirsium neomexicanum	
groundsel	Senecio multicapitatus	
lobeleaf groundsel	Senecio multilobatus	
Wright's goldenrod	Solidago wrightii	
common sow-thistle	Sonchus oleraceus	
slender daisy	Townsendia leptotes	
annual goldeneye	Viguiera annua	
yellow hiddenflower	Cryptantha flava	
James' hiddenflower	Cryptantha jamesii	
stickweed	Lappula redowskii	
puccoon	Lithospermum incisum	
Fendler rockcress	Arabis fendleri	
Richardson's tansy mustard	Descurainia richardsonii	
spectacle pod	Dithyrea wislizenii	
Western wallflower	Erysimum capitatum	
Fendler's bladderpod	Lesquerella intermedia	

APPENDIX G (cont'd)

Common Name	Scientific Name	Status ^{c}
Forbs, cont'd		
narrow-leaf mustard	*Thelypodiopsis linearifolia*	
(none)	*Thelypodium wrightii*	
wild candytuft	*Thlaspi montanum*	
Fendler's sandwort	*Arenaria fendleri*	
sandwort	*Arenaria lanuginosa*	
Mexican campion	*Silene laciniata*	
narrow-leaved goosefoot	*Chenopodium leptophyllum*	
dayflower	*Commelina erecta*	
Western spiderwort	*Tradescantia occidentalis*	
pinedrops	*Pterospera andromedea*	
rattlesnake weed	*Chamaesyce chaetocalyx*	
thymeleaf spurge	*Chamaesyce serpyllifolia*	
spurge	*Euphorbia lurida*	
enema weed	*Astragalus humistratus*	
Zuni milkvetch	*Astragalus missouriensis*	SS
deervetch	*Lotus nummularius*	
silvery lupine	*Lupinus argenteus*	
American vetch	*Vicia americana*	
catchfly gentian	*Eustoma exaltatum*	SE
purple geranium	*Geranium eremophilum*	
white geranium	*Geranium lentum*	
blue scorpionweed	*Phacelia coerulea*	
cinder cone phacelia (scorpionweed)	*Phacelia serrata*	SC/BS
Inland rush	*Juncus interior*	
pale horsemint	*Agastache pallidiflora*	
false pennyroyal	*Hedeoma drummondii*	
beebalm	*Monarda punctata*	
craglily	*Anthericum torreyi*	
Plains flax	*Linum puberulum*	
gypsum blazing star	*Mentzelia perennis*	SS
globemallow	*Sphaeralcea digitata*	
Fendler's globemallow	*Sphaeralcea fendleri*	
four-o'clock	*Mirabilis diffusa*	
desert four-o'clock	*Mirabilis linearis*	
Silvestre four-o'clock	*Mirabilis multiflora*	
umbrellawort	*Mirabilis oxybaphoides*	
tufted evening primrose	*Oenothera caespitosa*	
evening primrose	*Oenothera coronopifolia*	
spike broomrape	*Orobanche ludoviciana*	
pale trumpets	*Ipomopsis longiflora*	
woody dogretch	*Ipomopsis multiflora*	
winged buckwheat	*Eriogonum alatum*	
annual buckwheat	*Eriogonum annuum*	
wild buckwheat	*Eriogonum hieracifolium*	
antelope-sage	*Eriogonum jamesii*	
marsh rosemary	*Limonium limbatum*	SS
Northen fairy candelabra	*Androsace septentrionalis*	
Plains larkspur	*Delphinium virescens*	

APPENDIX G (cont'd)

Common Name	Scientific Name	Status [c]
Forbs, concl'd		
Fendler's meadowrue	Thalictrum fendleri	
Pennsylvania cinquefoil	Potentilla pennsylvanica	
desert innocence	Hedyotis rubra	
alumroot	Heuchera parvifolia	
wholeleaf paintbrush	Castilleja integra	
beardlip penstemon	Penstemon barbatus	
meadow penstemon	Penstemon oliganthus	SS
wandbloom beardtongue	Penstemon virgatus	
(none)	Schistophragma intermedia	
spikemoss	Selaginella densa	
desert verbena	Glandularia wrightii	
Western sagebrush	Artemisia campestris	
flat sagebrush	Artemisia carruthii	
Mexican sagebrush	Artemisia ludoviciana	
threadleaf groundsel	Senecio douglasii	
Riddelli's groundsel	Senecio riddellii	
rough menodora	Menodora scabra	
Grasses & Grasslike Plants		
Western wheatgrass	Agropyron smithii	
big bluestem	Andropogon gerardii	
Fendler threeawn	Aristida fendleriana	
pine dropseed	Blepharoneuron tricholepis	
sideoats grama	Bouteloua curtipendula	
black grama	Bouteloua eriopoda	
blue grama	Bouteloua gracilis	
hairy grama	Bouteloua hirsuta	
red brome	Bromus lanatipes	
sedge	Carex eleocharis	
threadleaf sedge	Carex filifolia	
Rocky Mountain sedge	Carex occidentalis	
Fendler's flat sedge	Cyperus fendlerianus	
flat sedge	Cyperus schweinitzii	
spike pappusgrass	Enneapogon desvauxii	
hairy tridens	Erioneuron pilosum	
Idaho fescue	Festuca idahoensis	
galleta grass	Hilaria jamesii	
foxtail barley	Hordeum jubatum	
Junegrass	Koeleria cristata	
wolftail	Lycurus phleoides	
muhly	Muhlenbergia fragilis	
mat muhly	Muhlenbergia richardsonis	
mountain muhly	Muhlenbergia montana	
spike muhly	Muhlenbergia wrightii	
New Mexico muhly	Muhlenbergia pauciflora	
sandhill muhly	Muhlenbergia pungens	
Indian ricegrass	Oryzopsis hymenoides	
littleseed	Oryzopsis micrantha	

APPENDIX G (cont'd)

Common Name	Scientific Name	Status [c]
Grasses & Grasslike Plants, concl'd		
muttongrass	Poa fendleriana	
Parish's alkali grass	Puccinellia parishii	PE/SE
little bluestem	Schizachyrium scoparium	
bottlebrush squirreltail	Sitanion hystrix	
alkali sacaton	Sporobolus airoides	
sand dropseed	Sporobolus cryptandrus	
New Mexico porcupine grass	Stipa neomexicana	
SHRUBS (Shrubs, half shrubs, vines & cacti)		
skunkbush sumac	Rhus trilobata	
slender gray sagebrush (Bigelow sage)	Artemisia bigelovii	
sand sagebrush	Artemisia filifolia	
fringed sagebrush	Artemisia frigida	
short-leaved brickelbush	Brickellia brachyphylla	
California brickelbush	Brickellia californica	
tasselflower brickelbush	Brickellia grandiflora	
(none)	Chrysothamnus nauseosus greenei	
rubber rabbitbrush	Chrysothamnus nauseosus Var. albicaulis	
rubber rabbitbrush	Chrysothamnus nauseosus Var. bigelovii	
broom snakeweed	Gutierrezia sarothrae	
gray horsebrush	Tetradymia canescens	
snowberry	Symphoricarpos oreophilus	
fourwing saltbush	Atriplex canescens	
winterfat	Ceratoides lanata	
feather indigobush	Dalea formosa	
wavyleaf oak	Quercus pauciloba Var. undulata	
wax current	Ribes cereum	
cliff fendlerbush	Fendlera wrightii	
flowering ash	Fraxinus cuspidata	
Western virgin's bower	Clematis ligusticifolia	
silver-leaf mountain-mahogany	Cercocarpus montanus Var. argenteus	
alder-leaf mountain-mahogany	Cercocarpus montanus Var. montanus	
Apache plume	Fallugia paradoza	
rock spirea	Holodicus dumosus	
pale wolfberry	Lycium pallidum	
Virginia creeper	Parthenocissus inserta	
New Mexico wild olive	Forestiera neomexicana	
Western black chokecherry	Prunus virginiana	
fineleaf yucca	Yucca angustissima	
banana yucca	Yucca baccata	
Wright's pincushion cactus	Mammillaria wrightii Var. wrightii	
pincushion cactus	Coryphantha vivipara	
Fendler's hedgehog cactus	Echinocereus fendleri	
claret-cup cactus	Echinocereus triglochidiatus Var. Melanacanthus	
claret-cup hedgehog	Echinocereus triglochidiatus Var. Triglochidiatus	
tree cholla	Opuntia imbricata	
berry pricklypear	Opuntia phaeacantha	
central pricklypear	Opuntia polycantha	

APPENDIX G (concl'd)

Common Name	Scientific Name	Status [c]
SHRUBS, concl'd		
Santa Fe cholla	Opuntia viridiflora	SC/BS
grama grass cactus	Pediocactus papyracanthus	SC/BS/SE
small-flower devil's claw	Sclerocactus parviflorus	SE
TREES		
Douglas fir	Pseudotsuga mensiesii	
alligator juniper	Juniperus deppeana	
oneseed juniper	Juniperus monosperma	
Rocky Mountain juniper	Juniperus scopulorum	
Gambel oak	Quercus gambelii	
piñon pine	Pinus edulis	
ponderosa pine	Pinus ponderosa	
netleaf hackberry	Celtis reticulata	
quaking aspen	Populus tremnloides	
Fremont cottonwood	Populus fremontii	

Notes: [a] This list includes only common species and is not comprehensive, except for special-status species.
[b] Sources: Francis & Williams 1988; Sivinski & Lightfoot 1992; USDI, FWS 1995, 1996; Vincent 1997.
[c] Status Codes: FE [d] - Federal Endangered, FT [d] - Federal Threatened, PE [d] - Proposed Endangered, FC [d] - Federal Candidate (Old Category 1 Species), SC [d] - Species of Concern (Old Category 2 Species), BS [e] - BLM Sensitive Species, SE [f] - State Endangered, SS [f] - State Sensitive.
[d] USDI, FWS 1995.

[e] USDI, BLM 1996.
[f] Sivinski & Lightfoot 1992.

APPENDIX H

SUMMARY OF LAND PROTECTION PLAN

APPENDIX H

SUMMARY OF LAND PROTECTION PLAN

INTRODUCTION

The BLM has prepared a Land Protection Plan for the El Malpais National Conservation Area (NCA) to provide strategies and priorities for the protection and preservation of resources, and for visitor use on nonfederal lands. This appendix summarizes the BLM's Final Land Protection Plan which was published in September 1989. The Final Land Protection Plan is incorporated by reference into this El Malpais Plan.

The Land Protection Plan was prepared to determine what land inside the boundary of the NCA needed to be in public ownership, as well as investigating other means of protection besides acquisition to achieve NCA purposes as established by the Congress. The plan is used to facilitate opportunities to protect the NCA through cooperation with state and local governments, landowners, and the private sector. It assists the BLM in identifying priorities for funding to protect public and private resources.

The Land Protection Plan also informs landowners about the BLM's intentions to acquire land or protect it through other means. Land protection priorities are identified, and requests for acquisition funds are based on these priorities.

It must be emphasized that the Land Protection Plan is not an offer to purchase land or interests in land. Rather, it serves to guide future protection efforts, subject to the availability of funds and other constraints. The plan in no way diminishes the rights of nonfederal landowners. The public has been encouraged to comment on the Land Protection Plan and to aid in its revision.

ISSUES SUMMARY

A summary of the issues regarding private land use within the NCA follows.

1. About 96,800 acres of privately owned mineral estate underlying federally owned surface is spread in a checkerboard pattern over much of the NCA.

2. Some lands within or adjacent to the Cebolla Wilderness, the West Malpais Wilderness, and the El Malpais National Monument are privately owned.

3. Cebolla Spring and the related marsh are key components of the Cebolla Canyon riparian habitat and are privately owned.

4. Control of the scenic quality along New Mexico Highway (NM) 117, Interstate (I) 40, New Mexico Highway (NM) 53 and County Road (CR) 42 is important to maintain the integrity of the NCA.

5. Lands containing some valuable natural and/or cultural resources, such as scattered parcels in the Brazo, Cerritos de Jaspe, and Breaks Units are privately owned.

6. Approximately 800 acres of Acoma Tribal Trust lands have been included within the boundaries of the NCA. Protecting Acoma concerns and the NCA is important.

7. An industrial park is being planned on private land that lies mostly within the NCA, to the northwest of the proposed Multiagency Center.

FUNDING & ACQUISITIONS PLANNED

TABLE H-1

LAND PROTECTION PLAN
ACQUISITION ACREAGE AND FUNDING

Item	Surface Acreage	Mineral Acreage
Current Ownership (NCA)		
Federal	213,600	165,800
Private	48,200	96,800
Acoma Indian Tribe	800	
Total	262,600	262,600
Proposed Method of Protection [a]		
Exchange or Fee Acquisition	14,500	96,800
Scenic & Conservation Easements	9,100	
Statutory Acreage Ceiling	None	
Funding Status		**Millions of $$**
Authorized Acquisition Ceiling		4
Appropriated to 1989		1
Proposed for FY 1990		1.25

Note: [a] The Land Protection Plan summarized here contains complete recommendations for only the first four protection priorities discussed below.

LAND PROTECTION RECOMMENDATIONS

The recommendations in the Land Protection Plan are based on legislative intent and direction established by the El Malpais legislation, Public Law (PL) 100-225. This law requires the BLM to protect important natural, cultural, scenic and scientific values within the designated boundaries of the NCA, but does not direct the agency to consolidate all land within the NCA into federal ownership.

The Congress intended that when the BLM seeks to acquire private land within the NCA, the consent of the property owner be obtained. This consent requirement applies unless an imminent threat exists that the land is to be developed in a manner detrimental to the purposes for which the NCA was established.

A combination of protection methods should be used to protect NCA resources on private lands.

As authorized by Sections 502 through 506 of P.L. 100-225, the BLM can acquire lands or interests in lands (mineral estate) by the following four methods: donation, purchase with donated or appropriated funds, exchange, and transfer from any other federal agency. Cooperative agreements can also be used to protect privately owned resources.

The following priorities for land protection and/or acquisition have been identified. Priorities could shift with changing conditions and knowledge. Immediate threats on privately owned lands containing important natural and/or cultural resources could also cause a shift in priorities. Other opportunities for protecting resources on private lands through cooperative agreements or technical assistance have not been identified as priorities, but will be pursued as appropriate.

1. The first priority for acquisition, preferably by exchange, includes all subsurface private interest within the NCA.

Mineral development within NCA boundaries is incompatible with the area's Congressionally mandated goals and purposes. Federal minerals have been withdrawn, and acquisition of private minerals would provide the same protection to the nonfederal parcels. Mineral exchanges and fee acquisition have already been completed with the principal subsurface landowners (the New Mexico and Arizona Land Company, and the Cerrillos Land Company).

2. The second priority for acquisition, preferably by exchange, includes all private inholdings and edgeholdings within and adjacent to the Cebolla Wilderness, as well as most inholdings and one edgeholding adjacent to the West Malpais Wilderness.

Acquisition of private inholdings would prevent any detrimental changes in land use and improve manageability. Acquisition of the edgeholdings would provide access into wilderness.

Especially important in the NCA is acquisition of private edgeholdings in the Breaks Unit that provide access into the Cebolla Wilderness. Acquisition and rehabilitation of Cebolla Spring and the Cebolla Spring riparian area in the Cebolla Wilderness and the Brazo and Breaks Units would ensure protection of a critical riparian area. The private portion of the Pinole Site in the Breaks Unit would be acquired. The "Old Hughes Place," a historical homestead in the Brazo Unit, may also merit preservation.

The inholding in Section 1, T. 6 N., R. 12 W. of the West Malpais Wilderness is not included in this priority because a house and barn have been built there. Most edgeholdings to the West Malpais Wilderness are not included because major range improvements exist on them.

3. The third priority is acquisition of scenic and/or conservation easements along the federal, state, and county highways passing through the NCA.

Commercial development and visual intrusions along the roadways (e.g., billboards) are incompatible with the goals and purposes of the NCA. Protection of the viewshed along NM 117 in the Neck Unit, the scenic gateway to the NCA, is most important. Also to be protected are the viewsheds along I-40 and NM 53 in the Neck Unit, and along portions of CR 42 in the Continental Divide Unit.

4. The fourth priority is the Acoma Exchange, if initiated by the Pueblo of Acoma. This exchange is mandated by P.L. 100-225 if requested by the Acomas.

5. The fifth priority for acquisition is lands containing natural and/or cultural resources that require management or protection, and lands needed for visitor access and facility development.

For those areas where private uses are incompatible with NCA goals and purposes, or where important resources are located, acquisition may be the only feasible means of protection. All private inholdings in the Brazo and Breaks Units should be acquired. However, other options such as cooperative agreements and easements may be explored. Exchange is the preferred method of acquisition.

In the Cerritos de Jaspe Unit, the trailhead for the Outlaw Trail is on private land, as is part of the Bandera Flow. Extremely destructive unscientific excavation of cultural resources has occurred on private land in this unit. Under this priority, the BLM would acquire any private land in Cerritos de Jaspe offered by owners.

Surface inholdings owned by the New Mexico-Arizona Land Company in the Continental Divide Unit, as well as private land owned by any other willing sellers, would be acquired under this priority. The BLM does not plan to acquire lands in the heavily subdivided areas of the Continental Divide Unit.

6. The sixth priority is protection of private lands and resources within the NCA to benefit resources within the El Malpais National Monument.

Any development visible from CR 42 in the Continental Divide Unit would intrude on the natural scenic quality of the National Monument. Acquisition of scenic or conservation easements along CR 42 would protect the viewshed in the monument.

Proliferation of access roads into the subdivided areas within and west of the Continental Divide Unit of the NCA would also intrude on the natural scenic quality of the National Monument. The BLM and the NPS will work with Cibola County and local landowners to limit the number of access roads across the National Monument and NCA, while still providing access from outside.

7. The seventh priority is lands on which no immediate threat to natural or cultural resources exists.

As lands become available in these other areas, they will be evaluated for their suitability for acquisition. Only exchange and sale proposals from private landowners that are in the best interest of the federal government and that meet the goals of the NCA will be pursued.

CHAIN OF CRATERS WILDERNESS ANALYSIS
& SUITABILITY REPORT

APPENDIX I

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APPENDIX I

CHAIN OF CRATERS WILDERNESS ANALYSIS AND SUITABILITY REPORT

GENERAL DESCRIPTION

On December 31, 1987, the Chain of Craters area was designated a Wilderness Study Area (WSA) by the El Malpais legislation, Public Law (P.L.) 100-225. Section 501(b)(1) of P.L. 100-225 directs the Bureau of Land Management (BLM) to review the Chain of Craters for its suitability as wilderness and submit a recommendation to the Congress.

The Chain of Craters WSA is located within the western portion of the El Malpais National Conservation Area (NCA) in north-central Cibola County, approximately 26 air miles southwest of Grants, New Mexico (refer to Map I-1). The unit is situated along the western edge of the North Plains, a topographically closed basin. The Continental Divide crosses the northern and central portions of the WSA. Topographic relief is created by numerous cinder cones that rise over a high plain. The highest point, Cerro Lobo, reaches an elevation of 8,345 feet. A natural, closed basin at the southern end of the WSA occurs at an elevation of 7,380 feet. Maximum relief is approximately 867 feet.

Precipitation averages 12 inches annually, with the majority occurring in July and August. The driest months are generally May and June. Winters are rather cold, summers are warm, and days are mostly sunny. Daily temperatures vary by 30 to 40 degrees. The average temperature for the warmest month (July) is 70 degrees Fahrenheit, and for the coldest month (January) is 32 degrees Fahrenheit (Roybal, et al. 1984).

The Chain of Craters contains approximately 18,300 acres of publicly owned surface and subsurface estate administered by the BLM. No private surface or subsurface estate exists within the unit (refer to Map I-2).

The western edge of the Chain of Craters WSA borders Ramah Navajo Indian lands and forms the western boundary of the NCA. Private lands are scattered just outside the WSA boundary. A quarter-section of land in Section 28, which borders the Chain of Craters on its northeast side, has been subdivided and contains approximately 600 lots. However, the subdivision has not yet been extensively developed.

The Chain of Craters WSA can be reached from County Road (CR) 42, which is accessed from New Mexico (NM) 53 on the north and NM 117 on the south. Access to the Chain of Craters is largely controlled by the condition of CR 42. The road is maintained by occasional blading; however, water collects on portions of the roadbed during wet periods, making it impassable during and after storms.

EXISTING RESOURCES, USES & ENVIRONMENT

Geology & Topography

The Chain of Craters is a series of volcanic cones and craters aligned along a large-scale zone of structural strain (shear). This zone consists of northeast- and north-trending faults, creating areas of weakness where basaltic magma has flowed to the earth's surface.

The Chain of Craters is a small portion of the Zuni-Bandera volcanic field where the structural shear zone has concentrated volcanic activity (Laughlin, et al. 1982). Activity occurred most recently within the last 1,000 years. Evidence indicates that the magma producing the volcanic features in the Zuni-Bandera field was generated at great depths in the earth's mantle. Analysis of geophysical data suggest a shallow (3.5-km) magma body occurs in this area. The cinder cones within the Chain of Craters are thought to be associated with the northeastern edge of the hypothesized magma body (Ander 1980). The cones formed as volcanic debris was ejected from vents and built up steep-sided slopes. Many of the cones have collapsed along one side.

Basalt and scoria are present in the WSA but are not considered significant resources because they also exist outside the unit and the NCA (Bigsby and Maxwell, 1981). Despite geologic and geophysical evidence for geothermal potential, the Chain of Craters is not included in any classification scheme for geothermal energy development. Neither the U.S.

Geological Survey nor the New Mexico State Land Office has included the area in Known Geothermal Resource Areas or Known Geothermal Resource Fields (McLemore, et al. 1986).

Water Resources

No perennial streams flow within the WSA. Unnamed ephemeral streams drain east and south away from the cinder cones into low-lying basins near the WSA boundaries. Most streamflow results from infrequent storms and snowmelt that vary from year to year. Mean annual runoff ranges from 0.1 to 0.5 inches (Roybal, et al. 1984).

Hydrologically, the WSA is part of a closed basin with no outflow of surface water. Water collects in low-lying areas where shallow lakes periodically form. Lake depth, areal extent, and longevity are controlled by the amount of precipitation and the evaporation rate.

Developed waters within the unit consist of dirt and metal tanks for livestock operations, and metal catchments for wildlife. Some metal tanks for livestock are connected to buried pipeline systems. These tanks are supplied by a water well on a private section outside the unit, and another on public land (T. 7 N., R. 13 W., Sec. 34 NW¼) within ¼ mile of CR 42 on the east side of the WSA.

The northern portion of the Chain of Craters is located within the Bluewater Underground Water Basin, while the southern portion is in the Rio Grande Underground Water Basin. These basins are administrative entities established by the New Mexico State Engineer to help regulate the appropriation of groundwater.

Soils

Four soil groupings occur in the WSA. Groupings found on the cinder cones are gravelly, cobbly loams of colluvium or windblown sediments that are derived predominantly from unconsolidated cinders or basalt. Ridges between cinder cones and lower slopes are covered in sandy, cobbly loams that are very stony in places. These loams are a mixture of alluvium and windblown sediments covering basalt.

At lower elevations, fans and swales spread from the cinder cones to flats and valley bottoms. Soil groupings in these areas range from fine sandy loams of mixed alluvium, to light brown sandy clay loams and olive brown clays. Overuse could encourage overland flow to channelize and create gullies.

Under ponderosa pine forest soils on the cinder cones tend to have slow to moderate permeability. Runoff is slow to medium, with erosion potential slight to moderate. Lower slopes and ridges in the piñon-juniper areas tend to have soils of slow permeability. Runoff is slow to medium, with erosion potential slight to moderate. The deep, well-drained soils of the brushy flats tend to have moderate erosion potential.

Water erosion is evident within the unit, with rates between .2 and .5 acre-feet per square mile (Roybal, et al. 1984). However, compared to the east side of the NCA, with erosion rates of .5 to 1 acre-feet per square mile, erosion in the Chain of Craters is less severe. Some vehicular ways are downcut to the point they are impassable. Where gully development has occurred, some two-tracks may skirt the developing gully.

Vegetation

The Chain of Craters contains three general vegetative types, according to the Bailey-Kuchler classification system. These are ponderosa pine, piñon-juniper woodland, and grama-galleta steppe. (The BLM has selected the Bailey-Kuchler Ecosystem classification system of the United States because it facilitates planning at a national level and provides a broad synthesis of current knowledge about the ecosystem geography of the country. It also serves as a useful reference for those who want an overview of ecosystem and landform representation in existing and potential parts of the National Wilderness Preservation System.)

Ponderosa Pine

Located on the upper slopes of the cinder cones at elevations of 7,300 to 8,300 feet, this vegetation type covers approximately 5,500 acres. Slopes range from 1 to 55 percent.

The forest is actually a mixed conifer woodland that combines ponderosa pine, piñon, alligator bark juniper, and other juniper species. Slope and aspect determine if ponderosa or piñon will be the dominant tree species at any site. The occurrence of alligator bark junipers in the WSA constitutes the northeastern extension of this species' range.

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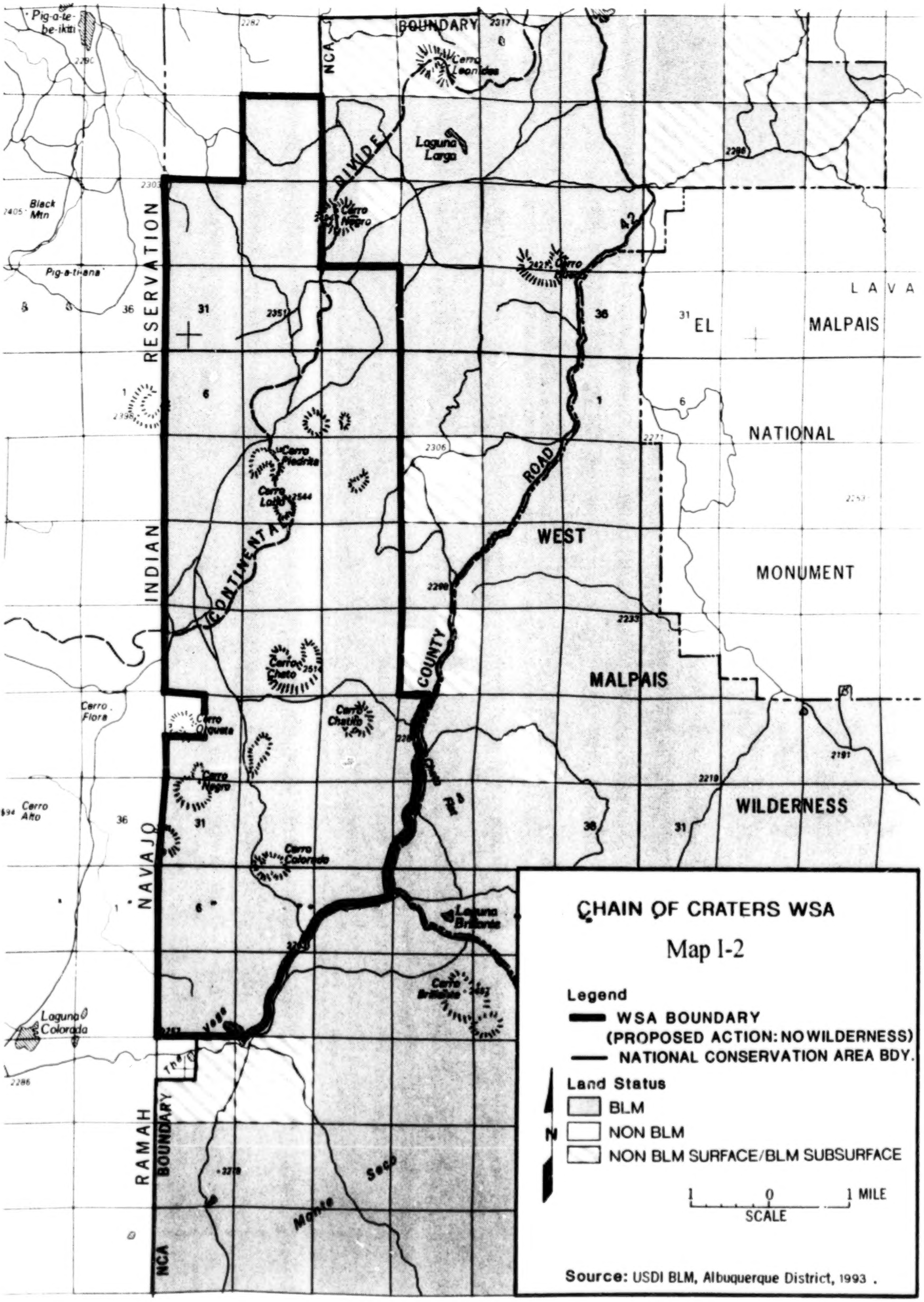

CHAIN OF CRATERS WSA

Map I-2

Legend

▬ WSA BOUNDARY (PROPOSED ACTION: NO WILDERNESS)

— NATIONAL CONSERVATION AREA BDY.

Land Status

▨ BLM

☐ NON BLM

▨ NON BLM SURFACE/BLM SUBSURFACE

1 0 1 MILE
SCALE

Source: USDI BLM, Albuquerque District, 1993.

Shrubs include oak species, gooseberries, and mountain mahogany. Forbs include Indian paintbrush, pingue, creeping mahonia, and buckwheats. Small areas of open ponderosa parkland occur with a grassy understory of Arizona fescue, mountain muhly, Junegrass, and mutton bluegrass.

Piñon-Juniper Woodland

Located on the lower slopes and ridges, piñon-juniper woodland ranges from 7,100 to 7,500 feet in elevation. Small patches of woodland are also scattered at higher elevations along the eastern and northeastern slopes of the cinder cones.

This vegetative type covers about 8,300 acres, invading ponderosa pine at higher elevations. At lower elevations, this woodland invades shrublands. Slopes vary from 1 to 50 percent. Trees range in age from 1 to 30 or more years and show good growth.

Rocky Mountain junipers are common at higher elevations, while oneseed junipers become common at lower elevations. Understory grasses are typically blue grama with some bottlebrush squirreltail and mountain muhly. Common shrubs are gray horse brush, sage, snakeweed and rabbitbrush. Forbs include Indian paintbrush, locoweed, mullein, saxifrages and groundsels. About 20 percent of this area is rock outcrop.

Grama-Galleta Steppe

This vegetation type includes two classes, sparse- bare and grass-shrub. Vegetation is sparse on grassy or shrubby fan terraces, flats and swales that slope gently upward into shrub-conifer. Elevations range from 7,000 to 7,500 feet with slopes of 1 to 8 percent. This type covers about 4,500 acres of the WSA.

Shrubs in this type include gray horsebrush, snakeweed, several species of sage, junipers, yucca, and *opuntia* cactus species with blue grama growing as a thin mat understory. Rabbitbrush forms nearly pure stands in some flatland areas. Lower flatlands in the southeastern portion of the WSA are predominantly blue grama or Western wheatgrass, with forbs and shrubs common.

Wildlife

Several special-status plant and animal species (cinder cone phacelia, Acoma fleabane, bald eagle) are known or have the potential to occur within the Chain of Craters. Should any special-status species on either the federal or state list be identified within the WSA, it will be protected in accordance with applicable laws and regulations.

The cinder cones, broken ridges and brushy flats form diverse wildlife habitats. This complex system provides potential habitat for over 60 species of birds, more than 20 species of small mammals, a mule deer herd, antelope, coyotes, bears, many species of reptiles, and game birds such as turkey and dove. The diverse vegetation and elevation make the WSA attractive to many migrating species of birds. The rough terrain and good cover make it likely that the WSA is visited by mountain lions.

Visual Resources

The Chain of Craters WSA contains highly rated scenic values. The unit has been designated as a Class II landscape with Class A/B scenic values. Visual Resource Management (VRM) Class II designation indicates that any change in the basic landscape elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape.

The views from the peaks of the cinder cones are of volcanic fields, sandstone bluffs rising above the fields, and broad panoramas of open forests with Mount Taylor in the background. The open forests create variety in form and texture in the foreground.

Air Quality

Air quality over the Chain of Craters is within state and federal standards. The unit has a federal designation as a Class II airshed, which allows moderate degradation of the WSA's air quality. The landscape characteristics of the Chain of Craters make alteration of the airshed apparent.

Cultural Resources

Archeological survey in the Chain of Craters is limited to a 10 percent sampling of eight sections, amounting to a total of 581 acres of Class III inventory. No cultural resource sites and few isolated artifacts were found in this survey, suggesting that cultural resources are minimal.

Reconnaissance in the WSA has revealed three historical sites. A homestead consisting of two par-

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tially standing cabins, a barn, a cellar, and assorted materials is located close to the eastern boundary. A camp with two standing cabins and sawmill remains are located near the northern boundary. A large shrub meadow close to the northwest boundary contains subtle evidence of a logging camp.

At least three American Indian tribes (Acoma, Zuni, and Navajo) have close ties to the Chain of Craters. All three claim it as part of the area they used before European settlement, and current boundaries find the Chain of Craters adjacent to Ramah Navajo Indian lands on the west.

Recognizing that American Indians have used the NCA in the past, P.L. 100-225 guarantees them access for traditional cultural and religious purposes (consistent with the American Indian Religious Freedom Act and the Wilderness Act). P.L. 100-225 further provides that specific portions of the NCA can be temporarily closed to protect privacy for traditional activities.

Mineral Development

No mineral resources have been developed with in the Chain of Craters WSA, and no mining claims or federal leases exist. With passage of P.L. 100-225, all federal minerals in the NCA were withdrawn from entry and development. The private subsurface in the Chain of Craters (approximately 8,960 acres) has been acquired and withdrawn from mineral entry.

Livestock Grazing

Portions of two BLM grazing allotments lie within the boundaries of the Chain of Craters, each containing range improvements (refer to Maps I-3 and I-4). Since P.L. 100-225 established the WSA, the Cerro Chato and Los Cerros Allotments have been combined to form one allotment called Los Cerros, which covers the WSA's northern portion.

Total dry herbage production ranges from 500 pounds per acre in poor years up to 1,200 pounds per acre in favorable years. Stocking rates range from 5 to 10 acres per animal unit month. The unit is poorly suited for yearlong grazing due to high elevation and potentially severe winter weather.

The northern portion of the WSA contains approximately 39 percent of the Los Cerros grazing allotment. The current grazing level is approximately seven head per section per year. Range improvements include approximately 21.5 miles of barbed wire fence line, 17 dirt tanks, 16 water troughs, 9 miles of buried water pipeline, two water wellheads and three 10,000-gallon water storage tanks.

The water well in the Los Cerros Allotment was drilled in 1981 to provide livestock water. Because the well did not exist before passage of the Federal Land Policy and Management Act (October 21, 1976), it cannot be considered as part of a "grandfathered" grazing operation and is therefore a temporary improvement. In accordance with the ***Interim Management Policy for Lands Under Wilderness Review***, if the Chain of Craters was designated as wilderness, the well would have to be abandoned, equipment removed, and the area restored.

The southern end of the WSA contains about 12 percent of the Cerro Brillante Allotment. The current grazing use level for this allotment is approximately seven head per section per year. Range improvements include about 3.5 miles of fence line and a dirt tank.

Timber Production

Records of logging in the Chain of Craters date from 1948 through 1975. During this period, 22 sale contracts were awarded for the harvest of 6.353 million board feet of timber within several sections of the WSA. The lands covered in these contracts were: T. 7 N., R. 13 W., Sections 4, 5, 6, 18, 19, 20, 21, 29, 30; and T. 8 N., R. 13 W., Sections 12 and 20. Associated with the harvest of timber, a right-of-way (Serial No. NM 0184210) for a timber access road was acquired in September of 1960 through private lands that existed in the WSA at that time. However, designation of the Chain of Craters as part of the NCA in 1987 retired commercial timber production.

Recreation

The most current BLM Recreation Opportunity Spectrum (ROS) inventory (USDI, BLM, 1996) has classified the WSA as roaded natural, semi-primitive motorized, and semi-primitive nonmotorized (refer to Map I-5). The area that borders CR 42 is considered roaded natural because the road is maintained by the county. However, the condition of CR 42 limits accessibility during wet weather.

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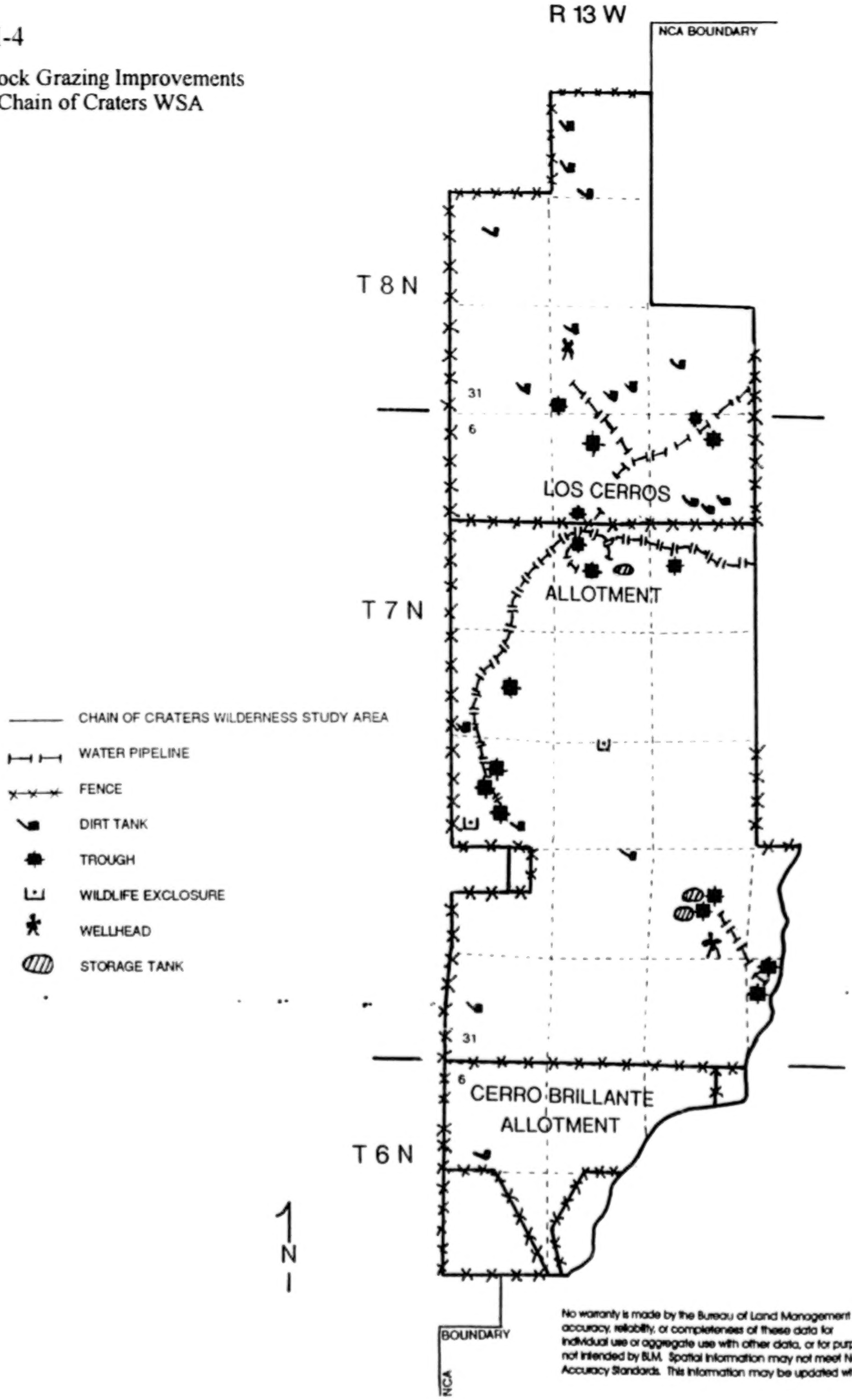
Map I-4

Livestock Grazing Improvements
in the Chain of Craters WSA



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

The WSA offers high potential for recreational use. Suitable activities include sightseeing, day hiking, mountain biking along old vehicle routes, backpacking, camping, semi-primitive motorized touring, and horseback riding. Opportunities exist for bird-watching, landscape and nature photography, and observation of geologic features.

The amount of recreation use in the Chain of Craters has not been quantified. Hunting is known to take place; in recent years BLM employees have encountered deer hunters during patrols. Other activities observed by BLM personnel are camping, hiking, mountain biking, and back-country driving (off-highway vehicle use). A corridor for the Continental Divide National Scenic Trail has been selected and passes through the Chain of Craters (USDA, FS 1993; refer to Map I-6).

Access & Transportation

The BLM's *Rio Puerco Resource Management Plan* (RMP; USDI, BLM 1986) limited motor vehicle use in the Chain of Craters to existing ways and trails. Approximately 35 miles of ways were inventoried and mapped in the RMP. More intensive road inventories conducted since 1986 now show 46.5 miles of travel routes (USDI, BLM, 1996). Some routes identified in the earlier inventory as abandoned or showing signs of little use now show evidence of renewed use. This use is the result of increased back-country recreational driving, livestock management and facility maintenance.

Wildlife Habitat

Two wildlife exclosures lie within the Chain of Craters, both in T. 7 N., R. 13 W: One exclosure in Section 17 is located in ponderosa parkland between two cinder cones. This exclosure contains an inverted umbrella water collection device. The other exclosure in Section 19 is located in a rabbitbrush flat.

The WSA was included in the BLM's *El Malpais Habitat Management Plan* (USDI, BLM 1981), which proposed 28 wildlife projects in what is now the Chain of Craters WSA. Projects included exclosures, waters, and habitat alteration.

Geologic Research

The Chain of Craters offers an excellent opportunity for observing and studying volcanic features and processes. Geologic research conducted in the past includes geochemical and isotopic studies (e.g., Laughlin, et al. 1982; Causey 1971).

American Indian Uses

The Chain of Craters is a cultural landscape, used by local American Indian groups to define and perpetuate their culture and traditions. Besides subsistence and economic uses and explicitly religious activities, the importance of the WSA is primarily tied to the sacredness of nature. Even though Indian people believe land resources are there to be used, they believe any use should be accompanied by reverence for the spiritual power in the landscape.

Although all of El Malpais and the universe have this sacred power, certain points are more important because they are mentioned in origin stories, serve as symbols for events in mythological time, or are places where spiritual beings can be contacted. General categories of important places to Navajo people include those in mythology, places of spiritual danger, shrines, and gathering areas. Important places to Pueblo people include those related to mythology, boundary points, shrines, ancestral villages, pilgrimage trails, and gathering areas.

Examples of most of these general categories are believed to be present in the WSA. Major Zuni shrines are located a short distance to the north and Acoma boundary shrines are found to the north, west, and south of the WSA.

The Ramah Navajos have expressed strong concerns about the Chain of Craters. Many Navajo religious shrines are believed to be present in the WSA, as are specific areas where plants, birds, minerals and other natural resources are gathered for use in ceremonies. Also, in more generalized areas Navajos hunt, gather dye materials, and pick nuts.

However, Pueblo and Navajo people are reluctant to divulge the location of sacred places or discuss traditional cultural and religious practices in any detail. Therefore, many specific places and practices pertaining to the Chain of Craters are omitted in this discussion, and continued consultation and coordination with the concerned American Indian groups is imperative.

Cultural Resources

No cultural resources are being actively managed in the Chain of Craters WSA. Surveys conducted in the WSA during the summer of 1989 indicated that cultural resources are very sparse.

WILDERNESS CRITERIA

Quality of Mandatory Wilderness Characteristics

The quality of mandatory wilderness characteristics of the Chain of Craters WSA has been documented in discussions for the development of P.L. 100-225. The following paragraphs elaborate on these characteristics.

Size

The area meets the size requirements of the 1964 Wilderness Act, "... at least 5,000 acres," as it contains 18,300 acres. The area is slightly over 3 miles wide at its widest point and approximately 11 miles in length at its longest point. The WSA is bounded on the west by the Ramah Navajo Indian lands, on the south by roads, on the north/northeast by private lands and roaded public lands (refer to Map I-1). One mile of a powerline right-of-way also helps form the boundary on the east side in Section 16, T. 7 N., R. 13 W. A 30-foot-wide right-of-way (Serial No. NMNM 76793) originally issued by the State of New Mexico in 1977 to the Continental Divide Electric Coop was acquired by the BLM as part of state land exchanges in 1988.

Naturalness

A detailed description of the human imprints in the Chain of Craters WSA is contained in the Wilderness Intensive Inventory (USDI, BLM 1988b), on file at the BLM Albuquerque Field Office. When assessing naturalness, the BLM must consider the overall impacts of such imprints on the entire unit.

In the Chain of Craters WSA, impacts include 21.5 miles of fenceline, 17 dirt tanks, a water well with a motorized pump, a capped wellhead, 9 miles of buried water pipeline, three 10,000-gallon above ground water storage tanks, 16 metal water troughs linked to the pipeline, three small historical dump sites (which could be removed using hand tools), 46.5 miles of vehicular routes, and two wildlife exclosures. These human imprints are scattered throughout the area.

P.L. 100-225 allowed for the continuation of grazing in the NCA, including the Chain of Craters. Should the area be designated wilderness, grazing and the appropriate use of motorized and mechanized equipment would still be allowed.

Past logging activity has left evidence of timber access routes, downed logs, and stumps. These stumps are dispersed throughout a range of maturity levels of mixed conifer and ponderosa pine. Some old slash piles can also be seen.

Many vehicular ways are evident throughout the WSA. Some appear to be abandoned and are difficult to trace in places, while others are very noticeable and are maintained by continuous use. A 1996 inventory mapped 46.5 miles of vehicle routes in the WSA (refer to Map I-7). With the existing density of vehicle routes, it is difficult to get more than ½ mile from any evidence of a vehicle route.

The berms around the dirt tanks are vegetated like the rabbitbrush meadows they stand in. These tanks are small and hold less than 10 acre-feet of water.

One wildlife exclosure is located in ponderosa parkland and contains a wildlife water catchment shielded by vegetative cover. The second exclosure is located in rabbitbrush flats edged by mixed conifer woodland, and blends in with its surroundings.

The WSA as a whole appears natural and is considered to exhibit the wilderness characteristic of naturalness. Vegetation and topography screen human impacts, contributing to the naturalness.

Solitude

The volcanic terrain and vegetation combine to create screening that provides an opportunity for individuals or groups to find secluded places for solitude. However, the configuration of the WSA, density of the vehicle routes, and the continuous need to maintain range improvements affect the opportunity to find isolated locations for solitude.

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Opportunities for Primitive & Unconfined Recreation

The BLM defines this wilderness characteristic as the potential for a WSA to provide opportunities for diverse activities that are not dependent on motorized vehicles. The terrain and vegetative features of the Chain of Craters WSA lend themselves to sightseeing, day hiking, nature photography, birdwatching, backpacking, camping and horseback riding. The WSA provides an outstanding opportunity for primitive recreation.

Special Features

The Chain of Craters is part of a large volcanic field in west-central New Mexico. The complex terrain and vegetation offer a variety of habitats for many species of wildlife including deer, bears, raptors and possibly mountain lions. The unit may occasionally be used as wintering ground by bald eagles. Several historical homesteads are located within.

Multiple Resource Benefits

The Chain of Craters contains many natural resources. Congressional designation of the area as wilderness would carry the weight of law and provide long-term protection. Through P.L. 100-225 the area is withdrawn from all forms of entry, appropriation, or disposal under public land laws; location, entry and patent under mining laws; and operation of mineral/geothermal leasing laws and all amendments.

No valid existing mineral rights are known within the Chain of Craters. The NCA is also closed to the collection of green or dead wood for sale or other commercial purposes.

Ecotypes Present

The vegetative-ecosystem classification for the Chain of Craters WSA is as follows (after Kuchler 1964; Bailey 1976).

Dry Domain
    Highland Province
    Colorado Plateau Subprovince
    Ponderosa pine
        • 5,500 acres (30 percent)
    Piñon-juniper woodland
        • 8,300 acres (45 percent)
    Grama-galleta steppe
        • 4,500 acres (25 percent)

Distance from Major Population Centers

The Chain of Craters is within a 1-hour drive of Grants, New Mexico and within 5 hours of Bernalillo and Sandoval Counties. In the 1980 census, parts of these two counties were included in a Standard Metropolitan Area (USDC, BC 1982). The unit is within 3 hours of Albuquerque and 4 hours of Santa Fe, two of the largest population centers in New Mexico.

The WSA is within a day's drive of several designated wildernesses, as shown on Map I-8. The western boundary of the West Malpais Wilderness for over 2 miles is separated from the Chain of Craters by CR 42 (refer to Map I-1). The BLM's other wilderness within the NCA, the Cebolla, is located approximately 14 miles to the east. The western boundary of the El Malpais National Monument is located 3 miles to the east of the WSA. Most of the National Monument (86,267 acres) has been identified as suitable for wilderness (USDI, NPS 1990a). Several other WSAs within a day's driving time of the Chain of Craters and the El Malpais National Monument have been found suitable for wilderness preservation.

MANAGEABILITY

To be recommended for designation, the Chain of Craters WSA must be capable of being effectively managed as wilderness. In determining manageability, the BLM must consider such factors as private and state inholdings, valid existing rights, mineral leases, rights-of-way, and the overall land ownership pattern.

No private surface inholdings, mineral leases, claims, or rights-of-way exist in the WSA. As of March 29, 1995, all private subsurface rights have been acquired.

The two grazing allotments that encompass the unit are not considered to be incompatible with wilderness management. However, continued maintenance of range improvements will result in the extended use of certain existing vehicle routes.

Because of use by local American Indians and the nature of Navajo religious practices, the BLM cannot effectively administer the Chain of Craters as wilderness without serious conflicts. Wilderness designation is perceived by American Indians in the

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area as causing significant hardships for them in carrying out traditional ceremonies, which are not confined to specific locations, times of year, or designated individuals.

P.L. 100-225 allows for nonexclusive access by Indian people for traditional and religious purposes as long as it is consistent with the intent of the Wilderness Act. Subject to certain exceptions, the Wilderness Act prohibits the use of motor vehicles and motorized equipment. Under these circumstances, it would be extremely difficult to prescribe an administrative procedure to allow vehicular access for traditional purposes without being in violation of the Wilderness Act. Special legislative provisions for this area would be required.

Also, land ownership along the boundaries (Ramah Navajo on the west, and private owners on the north and east) may present management problems. The possibility of trespass onto private or tribal land by wilderness users exists, although this threat might occur regardless of wilderness designation. The proximity of the subdivided quarter-section to the north could intrude on the unit's visual qualities if development takes place.

PUBLIC INVOLVEMENT

Since 1981, BLM activities have focused public attention on the Chain of Craters. The number of people expressing interest has been small, but they have been vocal in their support and opposition. Between 1981 and 1991, the drafts of four Chain of Craters documents were sent to the public for review and comment concerning WSA use and management. During this same period two El Malpais update letters were sent to persons on the Rio Puerco Resource Area mailing list requesting comments, and several editions of the El Malpais Update Newsletter were mailed to the public for input. Meetings were held to discuss the NCA, including the WSA.

Public meetings were held in Grants and Albuquerque in June 1988, and in Ramah in August 1988. At these meetings, 13 comments were received regarding the Chain of Craters' designation as wilderness. Five of these inputs expressed support for wilderness designation. Reasons cited were the potential wildlife benefits and the untrammeled naturalness of the WSA. Three inputs were apprehensive about grazing having an impact on the wilderness characteristics of the WSA. Seven comments reflect a concern that wilderness designation would negatively impact ranching operations. Ten inputs indicated that wilderness designation would make collecting vegetative material for traditional uses difficult for local American Indians.

Additional public meetings were held in Albuquerque and Grants in December of 1988, and Acomita and Ramah in January of 1989 to discuss alternative ways of managing the Chain of Craters. Public input received in response to these meetings and the newsletter mailing included 17 comments that wilderness designation would negatively impact existing ranching activities. Fourteen comments expressed concern that the diversity of wildlife habitats in the Chain of Craters should be maintained. Twenty-two comments reflected the view that wilderness designation for the Chain of Craters would negatively impact access for older American Indians to conduct traditional practices or collect vegetative materials. Eighteen comments favored closing specified vehicle routes inside the WSA boundaries. Thirty-two comments expressed concern that the large adult piñons be protected, while 10 comments expressed concern that more fires could occur because woodcutting would be limited.

On January 13, 1989, the Ramah Navajo Chapter passed a resolution affirming that the entire El Malpais is very sacred to them. The resolution states that it is important to the chapter that development be restricted and privacy be ensured for traditional practices. It also states their need for "unlimited and unrestricted access to the El Malpais to gather plants, native foods, medicines and salt required for traditional purposes, to make sacred offerings, and to carry out other traditional cultural practices and uses."

In April, 1990, open houses were held in Grants and Albuquerque to gather public input on the Draft El Malpais General Management Plan (GMP) and Environmental Assessment. Formal hearings were also held to take testimony on Chain of Craters wilderness suitability. Attendance at the open houses and hearings is shown in Table I-1.

The hearing transcripts are on file at the Albuquerque Field Office. Portions of the Draft and Final GMPs (the latter released in January 1991) with accompanying BLM responses are printed in the Chain of Craters Wilderness Analysis Report/EA

TABLE I-1

ATTENDANCE AT CHAIN OF CRATERS WILDERNESS MEETINGS

Location	Date	Attendance-- Open House	Attendance-- Hearing	Number Testifying
Grants	4/18/90	53	3	2
Albuquerque	4/19/90	44	6	5

(July 1991). In the final GMP, the No Wilderness Alternative was selected as the proposed action for the WSA.

Comments both opposing and favoring wilderness designation were received. Both groups share a concern for maintaining the integrity of the area's resource values, but differ in how to accomplish this goal.

Proponents of wilderness designation cite the WSA's natural character and its setting within the NCA. The Chain of Craters is contiguous with the western boundary of the West Malpais Wilderness, a fact that leads some to support wilderness designation. Some comment that the area is inappropriate for non-wilderness-related recreation activities such as mountain biking. Also it was expressed that significant reasoning was not presented to justify a no wilderness designation, and that a compromise could be worked out with the Ramah Navajos on access to sacred sites.

Opponents of wilderness designation cite possible limitations on ranch operations, and restrictions on access for traditional American Indian practices. The existence of other designated wilderness with the NCA boundaries has raised concerns by some recreationists that additional nonwilderness recreational opportunities would be lost.

The *Federal Register* of March 31, 1992, contained the Revised Implementing Procedures for the National Environmental Policy Act. This revision identified proposals for wilderness as a major action normally requiring an EIS. As a result, the BLM determined that an EIS should be prepared for the Chain of Craters WSA. The BLM announced its intention to prepare an EIS in a Notice of Intent published in the *Federal Register* on October 21, 1993 (Vol. 58, No. 202, p. 54369). This notice announced a 30-day public scoping period. The release of the Draft EIS was preempted by an April 1994, Interior Board of Land Appeals (IBLA) decision on the approval of the 1990-91 GMP/EA for the NCA. The IBLA directed the BLM to prepare an RMP/EIS for the entire NCA (including the Chain of Craters).

Comments received during the 1993 EIS public scoping period centered around the following issues:

Supporting Wilderness

- The area should be permanent wilderness because of its naturalness.
- The sense of isolation exists.
- Visits are a unique and special experience.
- Use for research and study of evolutionary adaptations, protect melanistic species.
- The wilderness system lacks grassland representation; Chain of Craters will help fill this gap.
- The area has high-quality natural and scenic values.
- The main objections to wilderness are raised by Ramahs and ranchers, but accommodations can meet these.
- Consider a full range of alternatives.
- The Draft EIS should examine the potential for developing the National Monument and the NCA, including paving CR 42 and the potential recreational use of the Chain of Craters.
- Show data on grazing uses, including species composition, production, and utilization.
- The 1991 EA mentions seasonal American bald eagle use.
- Show plans for roads.
- An NCA EIS should be done first to look at the big picture.

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Opposing Wilderness

- How will senior and disabled citizens see the land if vehicle traffic is restricted?
- Six comments simply said "No Wilderness."
- Wilderness creates a burden on the ranchers. Pipeline and fence maintenance would require a full-time person with hand tools. Worker safety could be a problem with only horseback access.

American Indian Issues

- The WSA is within an aboriginal land claim area.
- Shrines and landmarks are located along the Chain of Craters.
- American Indians have land use rights to shrines and natural resources such as forests, plants and minerals for traditional purposes.
- American Indians require vehicular access because of time and distance.
- Indians oppose wilderness because it denies efficient and timely access and is too restrictive.
- This is one of the holiest areas, with American Indian ties going back to creation.
- Protect the area as sacred, with unrestricted American Indian access and privacy for respectful traditional use.
- Proper management of this sacred living landscape should require consideration of an American Indian Wilderness.
- Give priority to nondestructive American Indian uses.
- There is a big difference between what the BLM considers cooperation with American Indians and what the Indians themselves consider cooperation from agencies regarding protection of religious and cultural rights.
- We do not believe it is fact that Ramah Navajos oppose wilderness designation.
- Has the BLM met with American Indians regarding vehicular access to any areas within the NCA?
- An all-wilderness alternative with full American Indian rights should be drawn up in consultation with these groups.

These comments have been considered in the preparation of this Plan Amendment/EIS.

WILDERNESS INVENTORY OF LANDS CONTIGUOUS TO THE CEBOLLA WILDERNESS

APPENDIX J

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APPENDIX J

WILDERNESS INVENTORY OF LANDS CONTIGUOUS TO THE CEBOLLA WILDERNESS

(October 1995)

INTRODUCTION

In determining if public lands possess wilderness values, the BLM conducts inventories using the criteria found in BLM guidance and given by the Congress in the Wilderness Act of 1964. If the agency concludes that the inventoried lands possess wilderness characteristics, it then conducts a study (through the planning process, with public participation) on the area's suitability or nonsuitability for preservation.

BACKGROUND

Inventories of roadless public lands now included in the southern portion of the Cebolla Wilderness were conducted under Section 603 of the Federal Land Policy and Management Act of 1976 (FLPMA). Since designation of the Cebolla Wilderness in December 1987, the BLM has acquired approximately 8,200 acres of private lands contiguous to the wilderness. With acquisition of these lands, another 2,180 acres of public lands not previously inventoried are now being considered for wilderness preservation. These lands were not previously considered because they were not of sufficient size, were bounded by roads, and were isolated parcels at the time of the Section 603 inventory. The 10,380 acres of contiguous public land covered by this inventory are shown on Map J.

The following documentation of human imprints is based on existing information and field inventories of the contiguous lands. Field reconnaissance to record location, size and description of these imprints and determine the impacts on overall naturalness was conducted in September 1995 by BLM staff members.

A vehicle travel route inventory was also conducted during the summer and fall of 1995 in the National Conservation Area (NCA), including the contiguous lands. (Note: The mileage listed in this report has been rounded to the nearest tenth of a mile. It was generated either by driving the route or calculating the distance by measuring the route as drawn on the inventory maps.)

The contiguous lands are being used primarily for grazing, recreation and wildlife habitat. The 62,000-acre Cebolla Wilderness is considered predominantly natural, although it has been influenced by such historical human use as agriculture, fuelwood gathering, and grazing. More recent additional use includes scientific research and dispersed recreation. The wilderness contains nationally significant archeological sites in extremely high density. A number of historical homestead-era sites can also be found there.

WILDERNESS CHARACTERISTICS

Size

Criteria for Size

The size criteria can be satisfied if an area has at least 5,000 acres of contiguous roadless public land, or is sufficiently large that its preservation and use in an unimpaired condition is practicable. An area less than 5,000 acres in size must possess naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and be contiguous with a designated wilderness or roadless area of sufficient size to make practicable its preservation as wilderness.

Evaluation of Present Situation

The 10,380 acres of inventoried lands are contiguous to the Cebolla Wilderness along its boundaries. They are located between the wilderness boundary, highways, or bladed roads and other appropriate boundaries.

Conclusion

The lands are contiguous to and a natural extension of the Cebolla Wilderness. Adjustments through inclusion of additional lands will allow for the wilderness boundary to be relocated to more identifiable locations on the ground, and a more extensive area supporting wilderness characteristics. Additional acreage will allow visitors more opportunities to experience isolation or participate in primitive recreational activities over a larger area in which the imprint of human work is substantially unnoticeable.

Naturalness

Criteria for Naturalness

A wilderness "generally appears to have been affected by the forces of nature, with the imprint of man's work substantially unnoticeable." Areas in which the imprint of human work is substantially noticeable, but that otherwise contain wilderness characteristics, are further studied when the imprints are expected to become substantially unnoticeable either naturally or by reclamation.

The cumulative impact of the intrusion of human work can be adverse on the overall naturalness of the study area. This is a function of the size of the unit, the number, distribution and scale of the impacts.

Evaluation of Present Situation

The following is a description and location of the structural imprints of human work in the inventory area or along the periphery. Each identified letter or number refers to the location of the imprint plotted on the corresponding field maps on file in the Albuquerque Field Office.

Fencelines

Imprint A consists of a network of fencelines constructed primarily of metal and wood posts with barbed wire strands. Occasional metal or wooden posts are placed where a gate might be located. Most of these fencelines are either for livestock management (to separate grazing allotments and pastures) or for road rights-of-way (ROWs).

A-1 Originates in T. 6 N., R. 10 W., Section 6 and proceeds in a southeasterly direction from the New Mexico Highway (NM) 117 ROW fence. The pasture boundary fenceline is 1 mile long.

A-2 Originates in T. 6 N., R. 10 W., Section 6 and proceeds south to Section 7. The northern portion of the fenceline connects to the A-1 fenceline at ½ mile. The pasture boundary fenceline is ½ mile long.

A-3 Forms part of the NM 117 ROW fence and is located in T. 6 N., R. 10 W., Section 6. The ⅓-mile-long fenceline is located on the east side of NM 117. A metal gate is part of the ROW fenceline; it provides access to the Henson No. 2 Windmill and Cebolla Canyon.

A-4 Part of the pasture boundary fenceline from Section 6. Continues south in T. 6 N., R. 10 W., Section 7, ¼ mile to the Henson No. 2 Windmill.

A-5 Continues south in T. 6 N., R. 10 W., Section 7, from the Henson No. 2 Windmill to Section 18. The fenceline is 3/4 mile long. A wooden gate on the fenceline (to allow access to an east pasture) is located on the section line between Sections 7 and 18.

A-6 Continues south in T. 6 N., R. 10 W., Section 18, for 1 mile. The fenceline follows the east side of the road. Approximately ⅓ mile south of the northern boundary of Section 18, the fenceline reaches a cattleguard.

A-7 Originates at the cattleguard in T. 6 N., R. 10 W., Section 18. The fenceline runs ½ mile west to the western boundary of Section 18.

A-8 Continues south, then turns east in T. 6 N., R. 10 W., Section 19, for .4 mile. Fenceline follows the east and north side of the road.

A-9 Continues east in T. 6 N., R. 10 W., Section 20, for ¼ mile to the Sand Canyon Windmill. Fence line follows the north side of the road.

A-10 Continuation of the east-side, NM 117 ROW fence in T. 6 N., R. 11 W., Section 1. The fenceline is .85 mile long.

A-11 Continuation of east-side, NM 117 ROW fence in T. 6 N., R. 11 W., Section 11. The fenceline is ¼ mile long.

A-12 Continuation of east-side, NM 117 ROW fence in T. 6 N., R. 11 W., Section 12, for .85 mile.

A-13 Continuation of east-side, NM 117 ROW fence in T. 6 N., R. 11 W., Section 14, for 1 mile.

A-14 Continues south for 3/4 mile in T. 6 N., R. 11 W., Section 34 to the A-15 pasture boundary fence line.

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A-15 Originates in T. 6 N., R. 11 W., Section 34, on the east side of County Road (CR) 41. This pasture boundary fenceline begins at a cattleguard and proceeds east for 3/4 mile, separating Sections 34 and 3.

A-16 Originates at the cattleguard and proceeds north for .4 mile on the east side of CR 41. The location is T. 6 N., R. 11 W., Section 34.

A-17 Originates at the northern end of fenceline A-16, then proceeds east to the Head Windmill and continues northeast to the A-14 fenceline. The A-17 fenceline is ½ mile long in T. 6 N., R. 11 W., Section 34.

A-18 Originates near the Henson No. 2 Windmill and follows the east side of a dirt road. This fenceline in T. 6 N., R. 10 W., Section 7, is ½ mile long and creates an enclosure of 40 acres. The bottom portion of this fenceline connects with the A-5 fenceline at the southern portion of Section 7.

A-19 Continues from the Sand Canyon Windmill in a southeasterly direction to the Henson No. 1 Windmill. This fenceline is ½ mile long and is located in T. 6 N., R. 10 W., Section 20.

A-20 Originates at the Henson No. 1 Windmill, proceeds north for ¼ mile and connects to a rock barrier. This fenceline is located in T. 6 N., R. 10 W., Section 20.

A-21 Fenceline in T. 4 N., R. 10 W., Section 7, surrounds the entire boundary of this section. It is 4 miles long (with approximately 1 3/4 miles within the inventory area and 2¼ outside).

Range Improvements

Imprint B is a 500-foot-deep well consisting of a maintained, 33-foot windmill tower with a 14-foot fan. Next to the windmill are two water storage ring tanks, one to hold 5,000 gallons and the other 500 gallons. The windmill and tanks are located within the NW¼NW¼ of Section 6, T. 6 N., R. 10 W. Approximately 5 acres are without vegetation.

Imprint C is a 475-foot-deep well consisting of a maintained, 33-foot windmill tower with a 10-foot fan. Adjacent to the windmill are a 5,000- gallon, water storage ring-tank and a 6-foot-diameter water storage tank. A 2-acre wire fence surrounds the windmill and serves as a livestock holding trap. The North Pasture topographical map labels this structure as the Henson No. 2 Windmill, located within the W½NE¼ of Section 7, T. 6 N., R. 10 W. Approximately 5 acres are without vegetation.

Imprint D is a cattleguard located in T. 6 N., R. 10 W., Section 18.

Imprint E is a 440-foot-deep well consisting of a maintained, 33-foot windmill tower with a 10-foot fan. Adjacent are a 5,000-gallon water storage tank and a 6-foot-diameter, water storage ring-tank. The Sand Canyon Windmill and tank are located within the NW¼NW¼ of Section 20, T. 6 N., R. 10 W. Approximately 5 acres are devoid of vegetation, with four standing wooden posts and several fallen posts about 50 feet away.

Imprint F is a 440-foot-deep well with a 33-foot windmill tower and a 10-foot fan. Adjacent to the windmill are a 6-foot-diameter, water storage ring-tank and a 5,000-gallon storage ring-tank. The windmill has not been maintained and probably is not operational. The Henson No. 1 Windmill is located within the NW¼SE¼ of Section 20, T. 6 N., R. 10 W.

Imprint G is a wooden corral with sandstone walls. The corral contains .25 mile of a fenced trap. The wooden trap with a wire wing trap is located on the east side of the corral. The wooden corral has not been maintained and is located adjacent to the Henson No. 1 Windmill within the NW¼SE¼ of Section 20, T. 6. N., R. 10 W.

Imprint H is the North Pasture Tank. The ½-acre dirt tank is located adjacent to the NM 117 ROW fence within the N½ of Section 12, T. 6. N., R. 11 W. The tank was filled with water.

Imprint I is the Head Windmill consisting of a 400-foot-deep well with a 33-foot tower and a 12-foot fan. Adjacent are two 6,400-gallon, water storage ring-tanks that are 22 feet in diameter and 2¼ feet deep. The maintained windmill and tank are located in T. 6 N., R. 11 W., Section 34. Approximately 2 to 3 acres are without vegetation.

Imprint J is a maintained wooden corral located in T. 6 N., R. 11 W., Section 34. Two wire traps direct livestock into the corral. A wooden log house is located next to the corral. The house is in disrepair, but appears to have historical significance.

Imprint K is a cattleguard located on the section line between Section 34, T. 6 N., R. 11 W. and Section 3, T. 5 N., R. 11 W.

Imprint L is the Indian Windmill consisting of a 400-foot-deep well with a 33-foot tower and a 12-foot fan. Adjacent are a 6-foot storage tank and a 6,400-gallon water storage tank that is 22 feet in diameter and 2¼ feet deep. The windmill and tank are located within the SE¼NE¼ of Section 15, T. 5 N., R. 11 W. An abandoned 6-foot-diameter water storage tank is also located at this site. Approximately 5 acres are without vegetation.

Imprint M is three dirt stock tanks that are vegetated and have not been maintained. The locations of these tanks are as follows.

M-1 NW¼SW¼ of Section 7, T. 4 N., R. 10 W. This tank holds ¼ acre-feet of water. Four upright wooden posts are in the tank, with a wooden sign nailed to an adjacent tree.

M-2 SE¼NE¼ of Section 7, T. 4 N., R. 10 W. This dirt tank holds ½ acre-feet of water, and is outside the inventory area but adjacent to it.

M-3 NE¼SE¼ of Section 7, T. 4 N., R. 10 W. This dirt tank is breached, but the storage capacity is ¼ acre-feet of water. The tank is outside the inventory area but adjacent to it.

Imprint N is a large, maintained dirt stock tank located in the SE¼SE¼ of Section 7, T. 4 N., R. 10 W. This tank is breached, has no storage capacity, and is outside the inventory area but adjacent to it.

Imprint O is a small dirt diversion dike located within the SE¼SE¼ of Section 7, T. 4 N., R. 10 W. This imprint is outside the inventory area but adjacent to it.

Miscellaneous Imprints

These intrusions are discarded items that can easily be removed.

Imprint P is an abandoned and rusted 55-gallon drum. The drum is split, with no evidence of hazardous materials. It is located in T. 6 N., R. 10 W., Section 6.

Imprint Q is a discarded rubber tire on the west side of the dirt road in T. 6 N., R. 10 W., Section 7.

Imprint R is a wooden pump jack that is part of the Rowe Homestead. The jack is located in T. 6 N., R. 10 W., Section 6, outside the fenced enclosure.

The Rowe Homestead is located in T. 6 N., R. 10 W., Section 6 and consists of a wooden building, fowl shed, barn and root cellar. This unstabilized homestead is surrounded by a 4-acre wire fence to protect it from livestock. A pedestrian walk-through was built for visitor access.

The Sandstone Homestead at the Henson No. 1 Windmill is located in T. 6 N., R. 10 W., Section 20. The stone homestead has collapsed, although the walls remain and a wooden corral (Imprint G) surrounds them. Visitors to the homestead must cross a deep arroyo.

Vehicle Routes

[Note: In this section, the letters and numbers in parentheses correlate to a route number and a 7.5-minute series, U.S. Geological Survey quadrangle map, with initials used in the inventory, e.g., (SC 19). The map is on file at the BLM Albuquerque Field Office.]

Route 1 is a low-use, revegetated two-track 1.4 miles long that originates in T. 6 N., R. 10 W., Section 6.

Route 2 is a low-use, revegetated two-track 1 mile long that originates in T. 6 N., R. 11 W., Section 1.

Route 3 is a low-use, revegetated two-track .3 mile long that is located in T. 6 N., R. 10 W., Section 7.

Route 4 is 1.6 miles long. It originates in T. 6 N., R. 11 W., Section 12 at the North Pasture Tank, and proceeds east past the Henson No. 2 Windmill. The usage is low.

Route 4A is a low-use, spur two-track from Route 4 that originates in T. 6 N., R. 11 W., Section 12. The route is ½ mile long.

Route 5 is a revegetated two-track originating in T. 6 N., R. 10 W., Section 7. The route is .6 mile long with low usage.

Route 6 (SC 19) is the main access route to Cebolla Canyon. It is a 6.2-mile, constructed and flat-bladed route with evidence of erosion. Originating at the ROW gate on NM 117 in T. 6 N., R. 10

W., Section 6, the route follows Cebolla Canyon and enters the wilderness boundary at the bottom of Section 28, T. 6 N., R. 11 W. The usage is medium and the road is 11 feet wide. It has been maintained by mechanical means but is in need of major maintenance, and some sections may need to be redirected. The route provides access for recreation users and ranchers.

Route 7 (NP 7) is a new, low-use vehicle route for authorized users only. This two-track could be used to gain access to range improvements. It is 8 feet wide and 2 miles long, originating at the wooden gate in T. 6 N., R. 10 W., Section 3 and terminating near the Henson No. 1 Windmill.

Route 8 is a low-use ,revegetated two-track 1 mile long. The route originates east of the Henson No. 2 Windmill.

Route 9 (SC 18) is the main access to Sand Canyon. This cherry-stemmed route is 2 miles long from the connection of Route 6 to the bottom of Section 30 in T. 6 N., R. 10 W. This is a constructed route, flat-bladed by mechanical means. The usage of this 11-foot-wide route is medium, primarily for recreation and livestock activities. The upper part of the road is in poor condition.

Route 9A is a new, connects with Route 9 and is .3 mile long. It is located in T. 6 N., R. 10 W., Sections 19 and 30.

Route 10 is a revegetated two-track .6 mile long that connects with Route 9. It originates in T. 6 N., R. 10 W., Section 20 and runs south to Section 19.

Route 11 is a revegetated two-track .7 mile long that connects with Route 9. It begins in T. 6 N., R. 10 W., Section 20 and runs south to Section 30.

Route 11A is a revegetated two-track, a spur off Route 11 that is 1 mile long. It is located in T. 6 N., R. 10 W., Section 19.

Route 12 (SC 2) originates off CR 41 and is used to access the Head Windmill. It is a ½-mile-long, 8-foot-wide two-track with low usage by ranchers. The location is T. 6 N., R. 11 W., Section 34.

Route 13 originates at CR 41 and is used to access the Head Windmill. It is .2 mile long, authorized for use by ranchers, and located in T. 6 N., R. 11 W., Section 34.

Route 14 (SC 3) originates off CR 41 and runs through T. 5 N., R. 11 W., Sections 9 and 10. The low-use route serves as access to Homestead Canyon, reaching a locked gate at the wilderness boundary and continuing beyond the gate. The 1.1-mile-long two-track is 8 feet wide and is authorized for use by ranchers. Although the route is closed to the general public, is also used by recreationists.

Route 15 (SC 4) extends north and south of the Homestead Canyon Road. The southern portion ends at an arroyo and the northern portion fades out. The route is 7 feet wide and .8 mile long. This new, low-use route is located in T. 5 N., R. 11 W., Sections 3 and 10.

Route 16 (SC 5) is an old woodcutting route. This low-use route located in T. 5 N., R. 11 W., Section 10 is .3 mile long.

Route 17 (SC 7) allows the rancher access to the Indian Windmill off Armijo Canyon Road without entering the Cebolla Wilderness. This new, low-use two-track route is for authorized users only. It measures 7 feet wide and .6 mile long, located in T. 5 N., R. 11 W., Section 15. It has two arroyo crossings in good condition.

Route 18 is the Armijo Canyon Road, located in T. 5 N., R. 11 W., Sections 15 and 16. It is 1.2 miles long, ending in a parking area at the Cebolla Wilderness boundary. Used by recreationists and ranchers, the route is a limited-access two-track. The nearby Dittert Site is visited by the public.

Route 19 (SC 9) originates off CR 41 and is located in T. 5 N., R. 11 W., Sections 21 and 22. This low-use, revegetated route is 1.6 miles long.

Route 20 (SC 11) originates off CR 102 and is a low-use, revegetated two-track .4 mile long. It is located in T. 5 N., R. 11 W., Section 27.

Route 21 enters T. 4 N., R. 10 W., Section 7 from the west through a gate in the pasture fence that surrounds the section. This two-track, which originates from CR 102 and is 1.3 miles long, provides access to two dirt stock tanks. The low-use route is 7 feet wide.

Route 22 (BC 5) is a .3-mile-long, low-use two-track that leads to Pen's Windmill. It is 7 feet wide and located in T. 4 N., R. 10 W., Section 7, outside the inventory area but adjacent to it.

Route 23 is revegetated and .3 mile long. It is located in T. 4 N., R 10 W., Section 7, outside the inventory area but adjacent to it.

Conclusion

As a whole, human imprints are scattered throughout the inventory area. In some cases they are screened by topography and vegetation and do not significantly detract from the area's naturalness. The imprints on naturalness exist from facilities built for livestock management, such as fences, windmills, watering tanks and troughs, and vehicle routes. The 33-foot-tall windmills with fans and associated watering tanks surrounded by barren ground are the most noticeable. However, they are scattered throughout the contiguous lands.

Outstanding Opportunity for Solitude or Primitive & Unconfined Recreation

Criteria for Solitude

Solitude is the opportunity for a visitor to avoid the sights, sounds and evidence of other people within a particular study area. He or she should be able to feel alone or isolated.

Evaluation of Present Situation

Visitors in the core of the inventoried parcels and closest to the existing wilderness are well screened from others by the surrounding terrain and vegetation. Opportunities for isolation or solitude are diminished in some of the peripheral lands on the north and west, which are more open, with gentler slopes and sparse, low-growing vegetation. These lands are also closer to roads, their sights and sounds in the northern and western portions of the inventoried lands.

Conclusion

A majority of the lands in T. 6 N., R. 10 and 11 W. have outstanding opportunities for solitude, primarily because of the topographic and vegetative screening. Less-than-outstanding opportunities are provided on some peripheral lands because of the lack of such screening and the presence of nearby roads.

Criteria for Primitive & Unconfined Recreation

A study area that meets these criteria is favorable for those activities that provide dispersed, undeveloped recreation that does not require facilities or motorized equipment.

Evaluation of Present Situation

Along with the adjacent Cebolla Wilderness, the canyons, drainages and mesas of the contiguous lands allow for unconfined movement over a large area. The semiarid climate allows for participation in nonmotorized, primitive recreation activities earlier and later in the year than in other typical, high-altitude wild areas. The mesas and rimrocks also provide numerous panoramic vistas of the surrounding landscape. Opportunities are also available for viewing cultural and wildlife resources.

Conclusion

The modification of the Cebolla Wilderness boundary would extend the area in which outstanding primitive recreational opportunities such as hiking, camping, backpacking, photography, and viewing of wildlife and other special features could be enjoyed.

Supplemental Values

Criteria for Supplemental Values

The Wilderness Act states that an area may also contain ecological, geological, or other features of scientific, educational, scenic or historical value. Special features of the area are optional, but the degree to which their presence enhances the area's suitability for wilderness designation should be considered. The evaluation should be based on an assessment of the estimated abundance or importance of each of the features.

Evaluation of Present Situation

The contiguous lands contain archeological and historical resources. Cultural resources in the Cebolla Wilderness range from early Archaic lithic scatters (about 7,000 years old) to historical homesteads and sawmills. Most common are small pueblos dating from Pueblo II through Pueblo III times (about 1,000 years old).

The Rowe Homestead is located in T. 6 N., R. 10 W., Section 6. The unstabilized site consists of a wooden building, fowl shed, barn and root cellar. A 4-acre wire fence surrounds the homestead to protect it from livestock. A pedestrian walk-through was built to allow visitor access.

The Sandstone Homestead at the Henson No. 1 Windmill is located in T. 6 N., R. 10 W., Section 20. The stone homestead has collapsed, but the walls remain and a wooden corral (Imprint G) surrounds it.

Conclusion

Special features within the contiguous lands, which include scenic values, cultural and historical values, contribute to the value of the area.

BACKGROUND INFORMATION ON POTENTIAL NATURAL VEGETATIVE COMMUNITIES

APPENDIX K

APPENDIX K

BACKGROUND INFORMATION ON POTENTIAL NATURAL VEGETATIVE COMMUNITIES

The BLM has chosen the achievement of Potential Natural Communities (PNCs) as one of its vegetative goals for the Planning Area (refer to Chapter 2). Background information on the PNCs is briefly described below.

Ecological Sites

Soils in the Planning Area are included in the Cibola County soil survey performed by the Natural Resources Conservation Service (USDA, NRCS 1993--formerly the Soil Conservation Service). In the survey, areas with similar soil classification characteristics (e.g., depth, texture, source materials) are grouped as "soil map units."

The NRCS further categorizes the soil map units into "ecological sites." An ecological site is an area of rangeland with a specific Potential Natural Community (PNC) and specific physical site characteristics, which differs from other kinds of rangeland in its ability to produce vegetation and respond to management techniques (BLM Technical Reference 4400-4). In other words, an ecological site is an area that has the potential to produce a unique vegetative community.

In its Ecological Site Guides, the NRCS describes the sites in terms of their vegetative composition. For each site, the PNC is the mixture of plants that would become established if natural processes were allowed to be completed. The Site Guides express this mixture as the combination of a range of percentages. For example, the PNC for a given site may contain 20 to 30 percent trees, 50 to 60 percent grasses, 10 to 20 percent shrubs and 10 to 20 percent forbs.

Ecological Condition

Comparing the PNC (ideal) to the existing plant mixture on a given site then yields a measure of that site's "ecological condition," or percentage of similarity to the PNC. Ecological condition is based on the concept of plant succession. Succession is the orderly process of community change, the sequence of communities that replace each other in a given area over time, as the result of natural processes (e.g. climate, fire). Each successional community is referred to as a "seral stage," ranging from Low to Climax. Table K-1 shows the seral stages, the percentage of plants each contains as compared to the ideal (climax) mixture or PNC, and the number of Planning Area acres currently found in each seral stage. Table K-2 summarizes the ecological condition of the grazing allotments in the Planning Area.

TABLE K-1

SERAL STAGES IN THE PLANNING AREA

Seral Stage	Planning Area Acres	% Similarity to PNC [a]
Low	598	0-25
Middle	107,296	26-50
High	209,697	51-75
Climax (PNC)	0	76-100
Total Acres	317,591	---

Note: [a] PNC-Potential Natural Community.

TABLE K-2

ECOLOGICAL CONDITION OF GRAZING ALLOTMENTS WITHIN THE PLANNING AREA [a]

(public land acres)

Allotment Number	**Allotment Name**	**Ecological Condition (Seral Stage) [b]**		
		Low	**Middle**	**High**
201	Cerritos de Jaspe	0	1,753	6,779
202	Bright's Well	0	80	545
203	Malpais	0	57,930	118,659
204	Raney	0	1,582	551
205	Los Pilares	546	862	14,342
206	Little Hole-in-the-Wall [c]	0	794	880
207	Cerro Brillante	0	5,239	17,849
208	Loma Montosa	0	3,907	0
209	Techado Mesa	0	23,063	6,515
210	Los Cerros [d]	0	9,817	36,701
211	Ventana Ridge	0	2,216	6,821
438	Monument Lake	0	2,560	0
439	La Vega	52	53	55
	Totals	598	107,296	209,697

Notes: [a] Allotments #222 (Chical) and #457 (Palomas) shown on Map 4 have recently been acquired from the State of New Mexico and are not yet inventoried.

[b] No allotments in the Planning Area are in the climax seral stage.

[c] Includes 640 acres in the Arrosa Allotment (#226).

[d] Cerro Chato (#200) and Los Cerros (#210) have been combined.

CHANGES IN LIVESTOCK GRAZING MANAGEMENT IN THE EL MALPAIS NCA & PLANNING AREA

APPENDIX L

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APPENDIX L

CHANGES IN LIVESTOCK GRAZING MANAGEMENT IN THE EL MALPAIS NCA AND PLANNING AREA

Administrative Changes

In 1987, the BLM completed a major land exchange with the New Mexico State Land Office. Approximately 27,000 acres of public land in Torrance County were exchanged for approximately 29,000 acres of state land in Cibola County.

The state had leased all the acquired acres for grazing. The BLM agreed to honor these leases until their expiration, and then to incorporate them into public land grazing. The majority of the acquired lands were already within BLM grazing allotments and were easily incorporated.

However, in two situations, the acquired state lands were completely surrounded by large blocks of private land, with no other BLM public land available in the grazing area. As a result, the two state lessees did not have public land grazing privileges. Each person was found to be qualified for these privileges, and was issued a grazing lease, one on the Chical (#222) and one on the Palomas (#457) Allotment.

In another administrative change, the BLM in April 1995 combined the Cerro Chato (#200) and the Los Cerros (#210) to form a single allotment. The combined allotment is now referred to as the Los Cerros (#210).

Other Changes Since Completion of the El Malpais GMP (1991)

As specified in both the *Rio Puerco* and the *Socorro RMPs*, the BLM initiated intensive monitoring studies on the I category allotments. Based on the studies, the agency reviewed grazing preferences and issued decisions in 1992 to establish new preferences. Using New Mexico Department of Game & Fish estimates of big game populations (antelope, deer and elk) for each of the I allotments, the BLM allocated sufficient wildlife forage. Table L-1 displays the grazing preference at the onset of the monitoring studies and after the decisions (including the wildlife allocations) were issued.

In addition to adjusting grazing preferences, the BLM has made other changes in grazing management in the Planning Area since completion of the *El Malpais NCA General Management Plan*. These are listed in Table L-2.

TABLE L-1

ADJUSTMENTS IN GRAZING PREFERENCE IN THE PLANNING AREA (1992)

Allotment Number	Allotment Name	Grazing Preference (AUMs)[a]		Wildlife Forage Allocation (AUMs)
		Before Monitoring	After Monitoring	
203	El Malpais	14,899	14,899	2,332
205	Los Pilares	2,446	1,716	483
207	Cerro Brillante	4,086	3,572	238
208	Loma Montosa	672	997	87
209	Techado Mesa	5,294	4,768	1,470
210	Los Cerros[b]	5,670	5,420	349
	Totals	33,067	31,372	4,959

Notes: [a] Grazing preference is the total number of AUMs grazed by livestock on the public lands (43 CFR 4100.0-5). An AUM is an Animal Unit Month, or the amount of forage needed to sustain one cow or its equivalent for one month (43 CFR 4100.0-5)

[b] AUMs are the combined total for Los Cerros and the former Cerro Chato Allotments.

TABLE L-2

ONGOING GRAZING MANAGEMENT PLANNING FOR ALLOTMENTS OVERLAPPING THE PLANNING AREA

Allotment Number	Allotment Name	Management Change
205	Los Pilares	Grazing Plan (1993)[a]
208	Loma Montosa	No grazing, June through September (1992)
209	Techado Mesa	Grazing Plan (1993)[a]
210	Los Cerros[b]	Grazing Plan (1995)[a]

Notes: [a] Includes pasture use schedule that provides for regular rest from livestock grazing use.

[b] Plan includes the former Cerro Chato Allotment.

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APPENDIX M

AUMs PERMITTED IN EL MALPAIS NATIONAL MONUMENT THROUGH DECEMBER 31, 1997

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APPENDIX M

AUMS PERMITTED IN THE EL MALPAIS NATIONAL MONUMENT THROUGH DECEMBER 31, 1997 [a]

Allotment Number	**Allotment Name**	**Monument Acres**	**Monument AUMs**
201	Cerritos de Jaspe	10,880	129
203	El Malpais	40,179	1,172
204	Raney	7,360	105
205	Los Pilares	1,670	312
206	Little Hole-in-the-Wall	2,134	180
208	Loma Montosa	5,120	1,950
210	Los Cerros	12,254	625
211	Ventana Ridge	1,794	182
	Totals	81,391	4,655

Note: [a] AUMs in the BLM portions of these allotments have now been reduced.

TECHNICAL DESCRIPTION OF THE BIOPHYSICAL LAND UNIT (BLU) MODEL

APPENDIX N

APPENDIX N

TECHNICAL DESCRIPTION OF THE BIOPHYSICAL LAND UNIT (BLU) MODEL

Biophysical Land Units (BLU) are homogeneous, ecological response units derived using a Geographic Information System (GIS), or ecological regions or divisions that are spatially analyzed and defined on the basis of contributing physical ecological components and cohesive interactive dynamics. The term "biophysical" represents the combination of biological and physical attributes.

The most important emphasis of the model is its focus on delineating and describing the expression of a dynamic system captured in a snapshot in time. There are, however, several other emphases of BLUs that separate the concept from other land inventory and mapping methods. Among these emphases are: (1) the BLU model can be used to consider the responses (or lack thereof) of the units to both natural and manipulated influences through time; (2) the spatial extent of an ecological response, using BLUs, can be mapped and analyzed without necessarily being visually discernible in the field; and (3) the amount of detail or scale of a BLU (the level in the hierarchy of the model in which analysis is accomplished) can be adapted to fit the question asked.

The base or "core" BLU data are derived from satellite remote sensing data, Digital Elevation Models (DEMs), soils data, and surface water data. The satellite data provide the "snapshot in time," or total area coverage of current condition, and are particularly useful in land areas that are difficult to access. The core layers (and if desired, any subsequently added hierarchical or "fine tuning" layers) are not merely merged, or defined through arbitrary visual assessment. BLUs are delineated when these "core" layers are modeled in matrix form, through Boolean logic (deductive operations of intersection and symmetric difference).

In other words, the matrix of defined components (vegetation/landcover, soils, surface water, slope, elevation, and aspect) draws the BLU boundary lines. Therefore, human perspective (emotions, values, and visual interpretation) do not predetermine the spatial delineation of BLUs. If an ecotype component combination has not been anticipated in the formulation of the matrix, that spatial area "drops out" of the BLU model. This simply results in a blank space on the map that is reanalyzed, one map (component) layer at a time, combined with field verification of the site. In this way, previously unknown anomalies, ecotypes, ecological responses, or disturbances may be identified. Finally, the hierarchical concept of BLUs, both in scale and attribute detail, contained in a GIS framework allows addition or deletion of data layers, integration of multi-temporal datasets, and analysis of change detected and multiple scenarios.

BLUs can be used to spatially model the extent and composition of ecotypes (and therefore biodiversity) by recognizing existing spatial divisions based on ecological responses. In other words, ecosystem biodiversity can be assessed across a region by the differentiation and location of separate BLUs, homogeneous response units defined spatially by attribute composition. A desirable effect of using BLUs to spatially model biodiversity is the retention of the "patchy" detail of existing environments.

BLUs provide spatial definition of complex ecologic details in a form that can be graphically displayed in a single map layer. This single BLU layer can display the first level of analysis--the homogeneous mix of the "core components" of existing environments, to which other defining layers (such as administrative boundaries or cultural features) can be added for reference, without confusing the displayed information beyond the point of recognition and interpretation. The focus is on spatial patterns, the assemblages of those patterns (reflecting communities) and the ecotones that provide the transition between homogeneous areas. This approach allows the analyst to better understand the dynamics occurring in the ecological system, without becoming overwhelmed with the specifics of multiple data layers. The emphasis, therefore, becomes one of dynamics, anomalies, edge conditions, stability and sustainability.

ASSESSMENT AND MONITORING

When areas of anomalies have been identified, field verified, and found to require more detailed analysis, another step in the hierarchy of BLU resolution is added. Additional spatial data layers can be overlaid to isolate possible contributing dynamics, or site-specific data can be collected, geocoded, and analyzed.

Enhancements to BLU modeling methods could use site-specific data Site data, like vegetation transects, correlate detailed (localized) snapshots in time to the broader, more generalized spatial snapshots in time provided by satellite remote sensing data. Satellite data, along with subsequently derived layers like BLUs, provide total area coverage. It has long been recognized that one of the most practical uses of satellite data is the identification of areas where more specific data collection and evaluation methods are required. This same simple notion supports the BLU concept of hierarchal scales of detail, allowing bi-directional flow of information between generic, regional dynamics, and local, more specific dynamics.

A practical example is to automate and link transect data to satellite data and BLUs. The approach is to use vegetation transect data collected into polycorder files and Global Positioning System (GPS) data for geocoding transect location. At those transect points, a simple compass is used to determine the vector of transects in relationship to spectral classes and BLUs. Locations of transects would include sites well within a homogeneous area, allowing a clear definition of the vegetative community assemblages. Locations could also include transects perpendicular to ecotones, thus defining spectral or community boundaries. Transects could also be long enough to bisect the boundary and allow for boundary shifts through time. By correlating these datasets, it should be possible to track subtle shifts in local ecological dynamics through the relationship of vegetation community changes and spatial change identified by BLUs.

Change that has already been detected and analyzed using BLUs considers the rate, amount, and direction of change, as well as the relationship of change to management manipulations and fluctuations in weather patterns. For example, habitat patchiness, difficult to quantify without GIS-derived BLUs and critical to ecosystem management, has been recognized as becoming more homogeneous in some areas of the El Malpais National Conservation Area (NCA).

Another use of BLU tracking of ecological change is the delineation and monitoring of response components that represent only a small percentage of a protected area. Tracking these areas, and using GIS to overlay management alternatives, could eliminate the areas from consideration for incompatible uses like a camping area, interpretive trail, or range improvement. GIS graphic representation of BLUs and conflict resolutions are then useful for policy implementation within an agency, and for public information.

The hierarchical framework of BLUs, besides providing flexibility in scale and detail of components of current conditions, is meant to facilitate correlation with other historical and continuously collected datasets. It is also meant to help provide "common ground" ecological datasets among scientific and/or management disciplines. This facet of the BLU concept is not meant to establish a totally new perspective, but rather to provide a methodology to link past and present datasets with future predictions. Improving methods of relating historic and current environmental data is crucial to identifying past patterns, developing analysis models for predicting change, evaluating historic manipulations of natural resources, and projecting preferred management alternatives.

BLUs have been used to help define and monitor "potential" and "desired" plant communities. Definition of potential plant communities includes an evaluation of the capability of a geographic area to support different plant species and assemblages. As potentials and capabilities are defined and understood, progress can be made toward managing for desired plant communities. Such management considers not only the capability of the land, but the social, economic, and political parameters that define land management alternatives. Using multi-temporal BLU datasets, the progress through time of current conditions, the relationship of potential and desired conditions can be measured in acreage and percent.

When these ecological analyses or identifications of change are accomplished, layers of cultural activities or management actions can be added to determine correlation. If changes are linked to management actions, are the changes acceptable? Can the amount and location of change be predicted? Change reflecting a developed, trailhead parking lot that controls vehicular impacts and mitigates erosion potentials may be very acceptable. Disappearance of an "undesirable" BLU in favor of a "desirable" BLU may be acceptable. An excessive percentage of loss of a BLU that represents a small, unique percentage of the NCA, or a threatened habitat, would be unacceptable.

CONCLUSION

Beyond the BLU applications of inventory, monitoring, and capability assessment, other applications that can be used or developed include compatibility analysis (between resource management programs), suitability analysis (alternative selection by value-based criteria), feasibility analysis (alternative selection dependent upon land capability and fiscal resources), and problem analysis (issue-specific, solution-driven study to support an action).

Example analyses could include determination of where to expect visitation based on visual resources and recreation opportunities; appropriate locations for trails or campsites; seasonally dependent impacts and possible closures; and interactions/conflicts between such interests as wildlife, recreation, livestock grazing, and uses by indigenous peoples.

These BLU analyses using geographic technologies are part of an assortment of tools for monitoring ecological responses and changes in natural resource management. A dynamic, responsive model like BLUs provides a framework for continuing analyses of natural and cultural components. Such a model facilitates management decisions as whether to maintain a condition, allow change, encourage change, or set limits for change--all in relationship to the capabilities and limitations of the ecosystem. Ultimately, BLUs are a combination of subtle, yet incredibly obvious spatial-temporal notions. They focus first on ecological dynamics (responses) separate from human expectations and desires, helping to sort the puzzle pieces for natural resource monitoring and managing.

APPENDIX O

TECHNICAL INFORMATION ON DIGITAL GEOGRAPHIC DATA SOURCES, PROCESSING, ANALYSES & MAPPING

APPENDIX O

TECHNICAL INFORMATION ON DIGITAL GEOGRAPHIC DATA SOURCES, PROCESSING, ANALYSES AND MAPPING

Geographic processing, analyses and mapping were accomplished in this planning effort on a Prime computer using a Prime operating system. Geographic Information System (GIS) software employed on this platform included: Automated Digitizing System (ADS), Map Overlay Statistical System (MOSS), Map Analysis and Processing System (MAPS), and Cartographic Output System (COS).

Base data, in vector format, were digitized at a scale of 1:24,000, and/or edited and updated at that scale. These data included:

- Administrative boundaries (e.g., Planning Area, NCA),
- Fire management areas,
- Livestock grazing allotments,
- Land ownership,
- Roads,
- Continental Divide National Scenic Trail,
- Soil groupings, and
- Facilities.

Digital Elevation Model (DEM) data, in raster (cell) format at the 30- meter scale, were purchased from the United States Geological Survey.

Vegetation/landcover data were derived from Landsat Thematic Mapper (satellite remote-sensing) data. These data were field verified during the classification process.

Because vegetation/landcover and DEM data are in raster (cell) format, analyses that required these data layers were accomplished in this format. For example, analyses were made of potential and desired plant communities in reference to the administrative boundaries of livestock grazing allotments and wilderness. The vector format data of soil groupings, allotments and wilderness boundaries were rasterized to be compatible for overlay analyses with vegetation and DEMs.

All raster-format analyses were accomplished at a 30-meter scale, except for Visual Resource Management (VRM), Recreation Opportunity Spectrum (ROS), and Off Highway Vehicle (OHV) data analyses. These analyses were accomplished at a 100-meter scale, which was more appropriate to the smaller- scale, more generalized or relative nature of the data. Also, these data were modelled through multiple stages of complex overlay analyses that required intensive computer processing, and because the relative nature of the data did not require a more specific scale, more timely processing was accomplished at the 100-meter scale.

Hardcopy output maps of digital data were generated through the COS program, and in some cases cartographically enhanced by hand.

APPENDIX P

TYPICAL WILDLIFE PROJECTS

APPENDIX P

TYPICAL WILDLIFE PROJECTS

WATER DEVELOPMENTS

Water guzzlers come in many varieties, but most are in the 400-square-foot range. A 10,000-square-foot area is generally fenced to protect the water development from livestock. A typical water development would cause a direct long-term disturbance of approximately 400 square feet and an indirect, short-term disturbance of vegetation (crushing by vehicle and foot traffic during construction).

Water development projects would not cause any irreversible damage or irretrievable commitment of resources. These projects could be dismantled and removed and the disturbed areas would revegetate.

VEGETATIVE MANIPULATION

Vegetative manipulation can be accomplished by five main methods: livestock management, prescribed and wildland fires, mechanical means, chemical means, or biological means. Vegetative manipulation for wildlife enhancement is generally accomplished through the use of livestock management and prescribed fires.

The following are some anticipated impacts to other resources created by prescribed fire to enhance wildlife habitats.

- Loss of Vegetation: A portion of the existing vegetation would be consumed by fire. Burn plans would emphasize prescriptions to create a mosaic of vegetative stages. Burns would be conducted to allow the existing wildlife populations to continue to use the area.

- Scenic Values: These would be reduced for a period of time, depending on the habitat and size of the treatments. Grass and small brush treatments are generally short term and blend back into the surrounding area within 1 to 3 years. Treatments in piñon/juniper woodlands or forest habitats would have short-term (2- to 5-year) or long-term (more than 5-year) impacts, depending on the prescription. Burns that took out the grass and brush understory and only a few trees would create a short-term impact on scenic values.

  Burns that were used to reduce woodland habitat or create a forest parkland type habitat would create long-term impacts by taking out trees to create openings and reduce densities. These dead standing trees could remain for decades. However, by incorporating fire back into a functioning ecosystem, the overall scenic values of the area would be enhanced.

- Air Quality: This would be diminished during and immediately after the fire.

- Loss of Livestock Forage: Prescribed fires would consume livestock forage within treatment areas. The overall loss of forage would be minimized within any one allotment to maintain ongoing livestock operations. The long-term effect on livestock and wildlife forage would be to enhance the diversity of vegetation. In areas where brush and/or trees were reduced, additional growth of herbaceous vegetation would be expected.

FENCES

A mile of fence would cause direct, long-term disturbance of approximately 50 square feet of vegetation. This disturbance would be considered long term because fences generally last 25 years or more. Short-term vegetative disturbance would be caused by vehicle and foot traffic during construction. This disturbance would generally be noticeable for a few weeks to a few months, depending on the terrain and type of equipment used. In some instances, where a fence was constructed through closed woodlands, a loss of approximately ¼ acre of trees per mile of fence would occur.

Fence projects would not cause any irreversible or irretrievable commitment of resources. These projects could be dismantled and removed, and the disturbed areas would generally revegetate. For grass-shrub habitats, the disturbance would be short-term and revegetation would generally occur over a 2- to 5-year period. In woodland habitat, the disturbance would be long term and revegetation would generally take 10 to 20 years or more.

APPENDIX Q

BIOLOGICAL ASSESSMENT

APPENDIX Q

BIOLOGICAL ASSESSMENT

The BLM is preparing a Biological Assessment for the Planning Area as part of the informal consultation process under Section 7 of the Endangered Species Act. At the end of the informal consultation process, if formal consultation is not required, the Biological Assessment will be attached to this plan. If formal consultation is required, the Biological Assessment and the Biological Opinion from the U.S. Fish and Wildlife Service will be attached.

APPENDIX R

INFORMATION ON CATRON COUNTY LANDS RECOMMENDED FOR CONGRESSIONAL INCLUSION IN THE EL MALPAIS NATIONAL CONSERVATION AREA

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INFORMATION ON CATRON COUNTY LANDS RECOMMENDED FOR CONGRESSIONAL INCLUSION IN THE EL MALPAIS NATIONAL CONSERVATION AREA

EL MALPAIS NATIONAL CONSERVATION AREA (NCA) PLAN

The Albuquerque Field Office is releasing the *Draft El Malpais NCA Resource Management Plan Amendment* (Plan Amendment or Draft Plan) *and Environmental Impact Statement* (EIS) in June 1999. The legislation designating the NCA mandated the development of a General Management Plan (GMP), which the BLM considered to be an activity-level document rather than a formal Plan Amendment and EIS. The GMP and accompanying Environmental Assessment (EA) were completed in 1991. Upon appeal by several wilderness advocates, the Interior Board of Land Appeals (IBLA) decided that the GMP/EA was inadequate and required the BLM to prepare a Plan Amendment/EIS.

The BLM El Malpais Planning Team used the best available scientific, social, economic and cultural data to develop the four alternative management strategies analyzed in the Draft Plan/EIS. Input from local residents, private landowners, recreational user groups, environmental and conservation groups, cultural preservation interests, other government agencies (federal, state, county, local and tribal) was carefully considered in the developing the Draft Plan/EIS. The public will have additional opportunities to provide input during a 90-day Draft Plan/EIS comment period.

BACKGROUND

- The 262,600-acre El Malpais NCA was established in December 1987 with the passage of Public Law (P.L.) 100-225.
- Two wildernesses, the Cebolla and West Malpais, were also established by P.L. 100-225 and are part of the NCA.
- The Plan Amendment integrates recent information with the extensive work previously completed for the GMP. Using an interdisciplinary approach, the planning team has developed adaptive management alternatives that include monitoring and inventory components designed to assess the effect of management on ecosystem health over time.
- The NCA is currently managed under the guidance of existing policy, the El Malpais legislation, the Rio Puerco Resource Management Plan (RMP--1986), and the Socorro Grazing EIS (1982).
- Construction activities in the NCA have been limited to the El Malpais Ranger Station (completed in 1991) and the area around La Ventana Natural Arch. These two projects were initiated based on approved EAs before the GMP appeal.
- Traversing part of the NCA and National Monument, 36-mile County Road 42 was dedicated as the Chain of Craters Back Country Byway in January 1994. The NCA is also home to a segment of the Continental Divide National Scenic Trail.
- Based on aboriginal land use claims, several tribal governments—most notably Acoma Pueblo— strenuously objected to establishment of the NCA and National Monument. Throughout the Draft Plan/EIS process, the BLM has consulted with the affected tribes and attempted to address their concerns.
- The Draft Plan/EIS includes a recommendation to legislatively amend the current Cebolla Wilderness boundary to include contiguous lands recently acquired by the BLM and exclude 160 acres of Acoma Pueblo land. A "nonsuitable" recommendation on the Chain of Craters Wilderness Study Area (WSA) is also included.
- The legislation establishing the El Malpais NCA provided for continued livestock grazing in the area. While the Draft Plan/EIS does not include allotment-specific analyses under the National Environmental Policy Act (NEPA), these have been initiated on all New Mexico grazing allotments. Several allotments within the NCA are considered high priority; NEPA analyses have

been initiated and are expected to be completed for those allotments during 1999.

- Portions of several grazing allotments within the NCA extend into Catron County. Although they are within the BLM Socorro Field Office boundaries, these small portions have been managed out of the Albuquerque Field Office through an administrative agreement. The plan recommends legislative extension of the NCA boundaries to include these areas. In the interim, grazing will continue in the area except as specified in the Socorro RMP.

- Unlike a BLM administrative designation (e.g., Area of Critical Environmental Concern or Special Management Area), Congressionally legislated designations—such as an NCA—do not require NEPA analyses or studies before designation. If the Congress officially extends the NCA boundaries, the BLM will then undertake NEPA analysis as part of the resource management planning process for the newly designated portions of the NCA.

- Two required public hearings will be scheduled during the Draft Plan/EIS comment period. The Final Plan and Record of Decision will address and incorporate comments received during the 90-day draft comment period.

THE UNITS & THEIR RESOURCES

Two units of land are involved. The **Techado Mesa-SFO Unit** includes approximately 5,000 acres of public land and 40 acres of privately owned land located in Township 4 North, Range 9 West, Sections 13 through 18 and 22. This unit also includes land in Socorro County (Section 18 in T. 4 N., R. 8 W.).

The **Tank Canyon-SFO Unit** includes approximately 10,100 acres located in T. 4 N., R. 10 W., Section 30 and T. 4 N., R. 11 W., Sections 13 through 16, 22 through 27 and 32 through 36. Public land accounts for 9,900 acres, while the other 200 acres are privately owned.

Both units adjoin lands in Cibola County currently being recommended for inclusion in the El Malpais NCA. These lands have resource values similar to those in the NCA. They are discussed below to the extent of the current available data.

Recreation & Facility Development

Recreation

The 14,900 acres of public land provide opportunities for extensive and unstructured recreation, including day hiking, backpacking, big game hunting, off-highway vehicle driving, horseback riding, camping, mountain biking, and gathering noncommercial products such as piñon nuts. The BLM Socorro Resource Management Plan (1989) did not assign Recreation Opportunity Spectrum (ROS) classes to these lands.

Facilities

Public lands within these two units provide no developed facilities, including trails, for recreational use. Such use of the area is dispersed, with users not dependent on developed facilities.

Inclusion of the units in the NCA would not affect recreational use or facility development.

Interpretation

Interpretation is a management tool that connects visitors with resources, promotes understanding of ecosystems and cultures, reinforces visitor safety and promotes resource management decisions. This tool has been applied to public lands within these two units through brochures for all lands administered by the Socorro Field Office. One of the management goals for the Newton Site in Tank Canyon is to protect the site for public interpretation.

Inclusion of the units in the NCA would not affect interpretation.

Access & Transportation

Transportation systems providing access to the public land within the Tank Canyon and Techado Mesa-SFO Units vary from BLM roads to county roads. Cibola County Road 103, north of the Techado Mesa-SFO Unit, serves as the primary vehicle route for access to public land in this unit. Catron County Roads A-081 and A-083, which traverse the Tank Canyon-SFO Unit along with numerous BLM roads and vehicle routes, provide access to the public land in that unit. Access to public land in both units may also be gained by hiking and horseback.

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Both units are classified as open to off-highway vehicle (OHV) use, except for a 40-acre tract of public land surrounding the Newton archeological site in the Tank Canyon-SFO Unit. Vehicle use on this 40 acres is limited to existing roads and trails. Bicyclists also can access these two units by using the existing vehicle travel routes. Cross-country travel is limited because of terrain and vegetative conditions.

Inclusion of the units in the NCA would likely limit OHV use.

Wilderness Management & Suitability

The 14,900 acres of public land do not contain any designated wilderness or a Wilderness Study Area (WSA). Inclusion of the units in the NCA would not affect wilderness suitability nor management.

Cultural Resources

A major concentration of cultural resources exists along the New Mexico Highway 117 corridor in the Spur, Cebolla, and Breaks Units of the NCA. This concentration of sites continues to the south into the Tank Canyon-SFO Unit. The cultural resources in this region are not well documented, but they are believed to include numerous prehistoric pueblo ruins dating to the Pueblo II and Pueblo III periods (A.D. 950 to 1325).

Among these is the Newton Site, a major ruin with approximately 165 ground-floor rooms that is believed to date between A.D. 1200 and 1325. The site includes distinctive architectural features such as an enclosed plaza, ladder-type construction, and perhaps a blocked-in kiva. Portions of the site were excavated by Theadore Frisbie in the mid-1960s, and the BLM completed some stabilization at this site by the BLM in the late 1970s. In addition to prehistoric resources, numerous historical homesteads are also located in this area.

Inclusion of the units in the NCA would facilitate the management of these cultural resources.

Wildlife

The Tank Canyon and Techado Mesa-SFO Units provide habitat for a wide variety of wildlife species. The Tank Canyon-SFO Unit (9,900 acres) adjoins the southwestern edge of the El Malpais Planning Area and is characterized by mesas, canyons, buttes and wide valleys. The dominant vegetation is shrub-grassland with intermingled piñon-juniper woodlands. This area is attractive and important habitat for mule deer, coyotes and many species of birds.

The Techado Mesa-SFO Unit (5,000 acres) adjoins the southeastern edge of the Planning Area and is characterized by sandstone mesas, buttes capped by lava flows, and wide valleys. The area is predominantly piñon-juniper woodlands and scattered ponderosa pine forests. Small playa lakes form seasonally on the mesa top. This area is attractive and important habitat for mule deer, turkeys, Abert's squirrels, and tree- and hole-nesting wildlife. Elk also are seen occasionally.

Inclusion of the units in the NCA would not affect wildlife.

Threatened, Endangered & Other Special-Status Species

Ten federally listed threatened or endangered, 2 proposed threatened, 2 candidate, and 36 BLM sensitive species are known or potentially could occur on public lands within the SFO Units. These are shown in Table R-1. Informal/formal consultation under Section 7 of the Endangered Species Act would be undertaken if any actions were proposed for these lands that would create a "May Affect" situation for any listed or proposed species.

Inclusion of the SFO Units in the NCA would not change the management of threatened, endangered or special-status species nor their habitats.

Vegetative Resources

Forests & Woodlands

Lands in the two SFO Units contain significant piñon-juniper woodlands and isolated ponderosa pine forests. The piñon-juniper woodlands have good potential to support commercial and personal-use fuelwood cutting, although only limited activity has taken place over the past 10 years.

Both units are within the Socorro Field Office's Cox Camp Woodland Management Area, which was designated to emphasize use for fuelwood, posts and poles. Because of the low demand for these types of products, no management plan to guide specific projects within the area has been developed. However, because of increasing residential subdivision

TABLE R-1

SPECIAL-STATUS SPECIES LIST FOR CATRON COUNTY

Common Name	Scientific Name	Status [a]
Mammals		
Allen's (Mexican) big-eared bat	Idionycteris (=Plecotus) phyllotis	SC
big free-tailed bat	Nyctinomops macrotis (=Tadarida m., T. molossa)	SC
black-footed ferret	Mustela nigripes	E
cave myotis	Myotis velifer	SC
greater Western mastiff bat	Eumops perotis californicus	SC
fringed myotis	Myotis thysanodes	SC
long-eared myotis	Myotis evotis	SC
long-legged myotis	Myotis volans	SC
occult little brown bat	Myotis lucifugus occultus	SC
pale Townsend's (=Western) big-eared bat	Plecotus townsendii pallescens	SC
Southwestern otter	Lutra canadensis sonorae	SC
small-footed myotis	Myotis ciliolabrum	SC
spotted bat	Euderma maculatum	SC
Yuma myotis	Myotis yumanensis	SC
Birds		
American peregrine falcon	Falco peregrinus anatum	E
Arctic peregrine falcon	Falco peregrinus tundrius	E (S/A)
Baird's sparrow	Ammodramus bairdii	SC
bald eagle	Haliaeetus leucocephalus	T
ferruginous hawk	Buteo regalis	SC
Interior least tern	Sterna antillarum	E
loggerhead shrike	Lanius ludovicianus	SC
Mexican spotted owl	Strix occidentalis lucida	T
Mountain plover	Charadrius montanus	PT
Northern goshawk	Accipiter gentilis	SC
Southwestern willow flycatcher	Empidonax traillii extimus	E w/CH
Western burrowing owl	Athene cunicularia hypugea	SC

TABLE R-1, concl'd

Common Name	Scientific Name	Status [a]
Fish		
Chihuahua catfish	*Ictalurus* sp.	SC
Desert sucker	*Catostomus clarki*	SC
Gila chub	*Gila intermedia*	C
Gila trout	*Oncorhynchus gilae*	E
loach minnow	*Rhinichthys cobitis*	T
longfin dace	*Agosia chrysogaster*	SC
roundtail chub	*Gila robusta*	SC
Sonora sucker	*Catostomus insignis*	SC
speckled dace	*Rhinichthys osculus* (Gila drainage)	SC
spikedace	*Meda fulgida*	T
Amphibians & Reptiles		
Arizona Southwestern toad	*Bufo microscaphus microscaphus*	SC
Chiricahua leopard frog	*Rana chiricahuensis*	SC
Lowland leopard frog	*Rana yavapaiensis*	SC
Mexican garter snake	*Thamnophis eques*	SC
narrowhead garter snake	*Thamnophis rufipunctatus*	SC
Invertebrates		
New Mexico silverspot butterfly	*Speyeria nokomis nitocris*	SC
Gila springsnail	*Pyrgulopsis gilae*	C
Plants		
Chiricahua dock	*Rumex orthoneurus*	PT
Gila groundsel	*Senecio quaerens*	SC
Goodding's onion	*Allium gooddingii*	SC
Hess' fleabane	*Erigeron hessii*	SC
Mogollon clover	*Trifolium longipes* var. *neurophyllum*	SC
Parish's alkali grass	*Puccinellia parishii*	SC
Santa Fe cholla	*Opuntia viridiflora*	SC
Zuni (=rhizome) fleabane	*Erigeron rhizomatus*	T

Note: [a] C--Candidate, CH--critical habitat, E--Endangered, PT--Proposed Threatened, S/A--similarity in appearance, SC--Species of Concern, T--Threatened.

development throughout the area, the demand for these products from nearby public land may increase substantially.

In addition, using commercial woodcutting to accomplish resource objectives could benefit the area's resources. For example, vegetative diversity, forage production, watershed condition, and wildlife habitat could all be improved by using commercial fuelwood cutting to create numerous small, natural-looking openings in the existing vegetation dominated by piñon and juniper.

Shrub-Grasslands

The shrub-grasslands contribute to vegetative diversity and watershed protection. They also provide wildlife habitat, forage for livestock, and fine fuel to carry natural and/or prescribed fires, making a large contribution to the area's overall ecological health.

Riparian/Wetland Areas

None have been identified.

Inclusion of the units in the NCA under the terms of P.L. 100-225 would stop commercial timber and woodland product sales, but would not affect home fuelwood sales, grazing or riparian/wetland area management.

Fire Management

Fire management in the SFO Units is primarily suppression oriented, using an appropriate management response to each wildfire. Over the past 10 years, however, no wildfires have been recorded on SFO lands in this area, nor have any prescribed burns been implemented. Significant urban/interface areas have been developed adjacent to both units, making carefully planned and coordinated fire management even more important.

The vegetative resources in the units evolved with fire and are fire dependent. The past 100 years of fire suppression and grazing in the area has negatively impacted these resources by increasing woody species such as piñon, juniper and shrubs, while reducing the amount of understory vegetation such as grasses and forbs. This further reduces the potential for a natural fire regime of frequent, low-intensity fires and moves the area into an infrequent, high-intensity regime.

Good potential exists to use fire to manage the vegetative resources in this area and correct some unnatural situations caused by fire exclusion. The isolated ponderosa pine stands should be treated with understory burns in the near future to remove the piñon-juniper encroachments, protect the stands from catastrophic wildfire, and improve their regeneration potential. Encroachments of piñon-juniper into grasslands can and should be treated with fire while the trees are still small.

Inclusion of the units in the NCA would not affect the use of fire for resource management.

Lands & Realty (Including Boundary Adjustments)

Land Ownership

Three private parcels are included within the SFO Units. The 5,000-acre Techado Mesa-SFO Unit includes a single 40-acre parcel of private land. The 10,100-acre Tank Canyon-SFO Unit includes two private parcels totaling 200 acres.

In the early 1970s, a large block of private land that was part of the Criswell Ranch was sold as small parcels. Recently, a number of subdivisions have been developed in rural areas throughout Catron County. On December 15, 1997, the Catron County Commission approved Phase I of the Wild Horse Subdivision located west of the Tank Canyon-SFO Unit. The proposed subdivision includes private lands situated between the Tank Canyon and Techado Mesa-SFO Units. Preliminary plans for this subdivision indicate that as many as 10 phases could be developed.

Acquisition Priorities

The Socorro RMP identifies the lands in the Tank Canyon area for disposal because they are isolated and difficult to manage. The Techado Mesa lands are identified for retention in support of the El Malpais General Management Plan. The RMP calls for consolidating land ownership by acquisition of nonpublic lands in various zones, with emphasis on certain Special Management Areas (SMAs).

Rights-of-Way & Land Use Permits

According to SFO records, a single right-of-way is authorized in the Tank Canyon area for a Western

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New Mexico Telephone Company line. No rights-of-way are on record for the Techado Mesa area.

The Tank Canyon-SFO Unit includes the Newton Site SMA, which is in a designated right-of-way avoidance area. According to the *Socorro Right-of-Way Avoidance Plan* (1991), rights-of-way will be allowed in the Newton Site SMA only if needed to administer and manage the area's resources. This unit contains many other archeological sites and historical homesteads.

Minerals

The Techado Mesa-SFO Unit includes approximately 3,000 acres of federal mineral rights in Catron County and about 570 acres of these mineral rights in Socorro County. The Tank Canyon-SFO Unit includes approximately 3,700 acres of federal mineral rights, all within Catron County. No mining claims are on record for either of the two units, nor are pending or active oil and gas leases.

Mineral potential is an assessment of the favorability or probability that a mineral resource occurs in substantial enough concentrations to be exploited economically. A subjective classification of high, moderate, low, very low, or unknown is used (McLemore 1986), along with highly, moderately, and less favorable or unknown areas (Gray 1989). High potential/favorability exists in areas of known mines or prospects where geologic and economic data show an excellent probability that mineral deposits occur. Moderate potential/favorability exists in areas where data indicates a good possibility that undiscovered deposits occur in formations known to contain economic minerals. Low potential exists in areas where available data imply the occurrence of mineralization, but indicate a low favorability. Less favorable or unknown areas include thoses areas where favorability has not been demonstrated.

In the SFO Units, the potential for leasable minerals ranges from less favorable or unknown to moderately favorable. Coal resources are known to exist in the area and the literature indicates a moderately favorable coal potential. Oil and gas potential is less favorable or unknown. A few wells have been drilled in or near the units, but all were dry holes. However, research shows good potential for exploration in Permian and Pennsylvanian age reservoirs present in the area.

A literature search indicates a low or unknown potential for locatable minerals in the proposed units. The potential for saleable minerals is also low to unknown. Research indicates some basalt, cinders and other volcanics are present in the Techado Mesa area. Also, Cenozoic age basin-fill deposits are present in other parts of the units. It is unknown whether these volcanics and fill are of economic quality or quantity.

It is expected that an increased demand for saleable minerals from public land will occur as the result of subdivision developments in the general area. The demands would likely occur in response to the need for surfacing material for road construction and decorative mineral materials for homesites.

Inclusion of the units in the NCA under the type of management specified in P.L. 100-225 would result in a mineral withdrawal. Federal minerals would not be available for development except under valid existing rights. Privately owned minerals (which are of unknown quantities and location) would not be affected.

Social & Economic Conditions

The figures in Table R-2 show that the Catron County population decreased between 1980 and 1990. A 1996 estimate of 2,665 residents shows the numbers increasing again.

The figures in Table R-3 show that employment between 1985 and 1996 has increased from 1,094 to 1,395. The leading sectors are farming, services, state and local government, and retail trade. Personal income by source and earnings by industry are shown in Table R-4.

In 1998 the county received payment in lieu of taxes in the amount of $296,633. The acres in the SFO Units are some of the lands on which this payment is based.

Inclusion of the SFO Units in the NCA would not likely affect the population, employment or in-lieu-of-tax payment for Catron County.

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TABLE R-2

CATRON COUNTY POPULATION BY RACE AND PARTIAL ETHNIC ORIGIN, 1980 & 1990

	1980		1990	
Population Category	**Number**	**Percent**	**Number**	**Percent**
Female	1,317	48.42	1,214	47.37
Male	1,403	51.58	1,349	52.63
Total	2,720	100	2,563	100
Race/Ethnic Origin American Indian, Eskimo, Aleut	0	0	---	---
Asian or Pacific Islander	0	0	---	---
Black	10	.37	---	---
Other Race	41	1.51	27 [a]	1.05
White	---	---	---	---
Hispanic Origin	780	28.68	728	28.40
Non-Hispanic White	1,889	69.44	1,808	70.54

Note: [a] Calculated; race, ethnic origin not identified.

Soils & Water

The Techado Mesa-SFO Unit is associated with the larger Techado Mesa area. There are 17 soil map units in this larger area (identified between three soil surveys) that include a wide range of soil, geology, vegetation and landscapes. These map units have been placed into five broad groups. The following three groups are found in the Techado Mesa-SFO Unit.

The second of the five groups lies on moderately steep to steep ridges and alluvial fans. Soils are shallow and very shallow over sandstone, and have surface textures ranging from gravelly clay loam to gravelly fine sandy loam. The potential for water erosion is moderate to high, while the hazard for soil blowing is high. The vegetative cover is usually grasses with scattered piñon and juniper.

The fourth of the five groups includes areas of steep rock outcrops and escarpments. Soils depths range from very shallow to deep with coarse to moderately fine textures. The hazards of water erosion and wind blowing range from slight to severe. Vegetation consists of grasses, shrubs and piñon-juniper woodland.

The last of the five groups covers the woodlands from the grass-piñon-juniper complex through the piñon-ponderosa pine to the ponderosa pine forest. Slopes range from 2 to 35 percent on mesa tops, basalt hills, ridges and escarpments. Soil depths range from shallow to deep. Soil textures of sandy loams, stony loams, cobbly loams and cobbly clay loams reflect parent material that includes sandstones, shales and basalts.

The microbiotic soil crust community is represented primarily by cyanobacteria and a foliose lichen tentatively identified as Xanthoparmelia. This lichen provides good ground cover and erosion protection under light to moderate grazing. Antelope graze on this lichen.

TABLE R-3

CATRON COUNTY EMPLOYMENT BY INDUSTRY, 1985 & 1996

Industry	1985		1996	
	No. of Jobs	Percent of Total Jobs	No. of Jobs	Percent of Total Jobs
Farm	333	30.44	270	19.35
Non-Farm [a]	761	69.56	1125	80.65
Private (Total)	468	42.78	772	55.34
Agricultural Services, Forestry, Fisheries & Other	42	3.84	59	4.23
Mining	(D) [b]	(D)	12	.86
Construction	46	4.20	80	5.73
Manufacturing	84	7.68	55	3.94
Transportation & Public Utilities	21	1.92	75	5.38
Wholesale Trade	(L) [c]	(L)	(L)	(L)
Retail Trade	91	8.32	173	12.40
Finance, Insurance & Real Estate	(D)	(D)	51	3.66
Services	166	15.17	266	19.07
Government & Government Enterprises (Total)	293	26.78	353	25.30
Federal-Civilian	107	9.78	127	9.10
Federal-Military	13	1.19	10	.72
State & Local	173	15.81	216	15.48
Totals [d]	1,094	100	1,395	100

Notes: [a] Sum of the Private (Total) and Government/Government Enterprises (Total) categories.

[b] (D)--Not shown to avoid disclosure of confidential information. Estimates are included in totals.

[c] (L)--Less than $50,000. Estimates are included in totals.

[d] Sum of the Farm, Private (Total) and Government/Government Enterprises (Total) categories.

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The 30 soil map units of the El Malpais Allotment have been placed into six broad groups. The following three groups occur in the Tank Canyon-SFO Unit.

Group two, the bottomland association, is found along drainageways, bottomlands and swales. The soils are deep and fine textured on gentle slopes. Vegetation is primarily grasses and shrubs. The hazard for water erosion is moderate for most soils.

Group four is a grass-woodland association with slopes generally less than 10 percent. Soils are moderately deep to deep with sandy loam and fine sandy loam textures. In three areas where gravel or cobbles become significant in the soil, the textures shift to loams and clay loams and depths become shallow. The hazard for water erosion is moderate.

Group five consists of a woodland association on a range of slopes from 2 to 100 percent. Vegetation is an association of piñon, juniper, shrubs and grasses. Soil depths are usually shallow, with textures ranging from gravelly clay loam to sandy loams. The hazard of water erosion is severe for most of the area.

Inclusion of the SFO Units in the NCA would not affect soils or watershed.

Visual Resources

Techado Mesa has rolling topography and a high, steep-sided mesa capped by lava flows. Vegetation is dominated by piñon-juniper woodland and ponderosa pine forest with some oak/deciduous understory. Small playa lakes form seasonally on the mesa top. Tank Canyon has rolling topography with dominant piñon-juniper vegetation.

Visual resources on the public land within these two units are managed by the Socorro Field Office as Visual Resource Management (VRM) Classes III and IV. The BLM has established a system for evaluating visual values and uses four VRM classes to provide management direction. Classes II, III and IV are assigned based on combinations of scenic quality, sensitivity levels, and distance zones.

The VRM objective for Class III lands is partial retention of the existing landscape character. The level of visible change to the characteristic landscape should be moderate. Management activities may attract attention, but should repeat the basic elements (form, line, color, and texture) found in the predominant natural features of the characteristic landscape.

The VRM objective for the Class IV lands is to minimize impacts from activities and uses through careful location, a low level of disturbance, application of design principles, and repetition of the basic landscape elements. Within lands assigned this management class, major modification of the existing character of the landscape is permitted. The level of change can be high, dominate the view and become a major focus of the viewer's attention.

Inclusion of the SFO Units in the NCA would not affect visual resources nor their management.

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ABBREVIATIONS AND ACRONYMS

AADT	adjusted average daily traffic
ACEC	Area of Critical Environmental Concern
AFO (formerly ADO & RPRA)	Albuquerque Field Office (formerly Albq. District Office & Rio Puerco Resource Area)
AMP	Allotment Management Plan
APHIS	Animal & Plant Health Inspection Service
APLIC	Avian Power Line Interaction Committee
ARPA	Archeological Resources Protection Act
AUM	animal unit month
BLM	Bureau of Land Management
BLU	Biophysical Land Unit
C	Custodial (category for grazing allotments)
CDNST	Continental Divide National Scenic Trail
CFR	Code of Federal Regulations
CR	County Road
EA	Environmental Assessment
EIS	Environmental Impact Statement
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FLPMA	Federal Land Policy & Management Act
FR	Federal Register
FS, USFS	U.S. Forest Service
FWS, USFWS	U.S. Fish & Wildlife Service
GMP	General Management Plan
HMP	Habitat Management Plan
I	Improve (category for grazing allotments)

IBLA	Interior Board of Land Appeals
IM	Instruction Memorandum
LAC	Limits of Acceptable Change (monitoring system)
M	Maintain (category for grazing allotments)
NAGPRA	Native American Graves Protection & Repatriation Act
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NM	New Mexico
NMDG&F	New Mexico Department of Game & Fish
NMSH&TD	New Mexico State Highway & Transportation Dept.
NOI	Notice of Intent
NPS	National Park Service
NRCS (formerly SCS)	Natural Resources Conservation Service (formerly Soil Conservation Service)
NWPS	National Wilderness Preservation System
OHV	off-highway vehicle
P.L.	Public Law
P.L. 100-225	Enabling legislation for the El Malpais National Conservation Area & National Monument
PNC	Potential Natural Community
R.	Range
RIM Plan	Range Improvement Maintenance Plan (for wilderness)
RMP	Resource Management Plan
RN	roaded natural (recreation opportunity)
ROS	Recreation Opportunity Spectrum
RPRA	Rio Puerco Resource Area

Sec.	Section
SPM	semi-primitive motorized (recreation opportunity)
SPNM	semi-primitive nonmotorized (recreation opportunity)
SFO (formerly SRA)	Socorro Field Office (formerly Socorro Resource Area)
SRMA	Special Recreation Management Area
SRP	special recreation permit
T.	Township
T&E	threatened & endangered species
USC	United States Code
USDA	U.S. Department of Agriculture
USDC	U.S. Department of Commerce
USDI	U.S. Department of the Interior
VRM	visual resource management
WSA	Wilderness Study Area

GLOSSARY

allotment	An area of land designated and managed for livestock grazing.
allotment management plan (AMP)	A documented program that applies to rangeland operations on public land. An AMP (1) is prepared in consultation with the permittee(s) or lessee(s) involved; (2) prescribes the manner and extent to which livestock operations will be conducted; (3) describes the type, location, ownership, and general specifications for the rangeland developments to be installed and maintained; and (4) contains other provisions relating to livestock grazing and prescribed objectives, consistent with applicable law.
alluvial fan	A fan-shaped accumulation of disintegrated soil material, water-deposited and located in a position where the water departs from a steep course to enter a flat plain or open valley bottom.
animal unit month (AUM)	The amount of food or forage required for one month by a mature cow, cow and calf, or the equivalent.
Area of Critical Environmental Concern (ACEC)	An area of public land where special management attention is needed to prevent irreparable damage to important historical, cultural or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.
arterial road	Often referred to as a "primary access route," provides main access to large blocks of public land for its use, development, protection and administration. Generally open to public use.
back country byway	A BLM component of the National Scenic Byway System that focuses primarily on corridors with high scenic, historical, archaeological, or other public interest values. The road may vary from a single-track bike trail to a low-speed paved road traversing back country areas. The byways are subdivided into four types based on characteristics. (Source: BLM Manual 8357) Type I - Roads with pavement or an all-weather surface and grades that are negotiable by a normal touring car. Usually narrow, slow-speed, secondary roads. Type II - Roads that require high-clearance vehicles, usually not paved but with some type of surfacing. Grades, curves, and road surface can be negotiated with a 2-wheel-drive, high-clearance vehicle without undue difficulty. Type III - Roads that require 4-wheel-drive or other specialized vehicles such as dirt bikes or all-terrain vehicles (ATVs). Usually not surfaced, but maintained for safety and resource protection purposes. They have grades, tread surfaces, and other characteristics that require specialized vehicles to negotiate. Type IV - Trails managed to accommodate dirt bike, mountain bike, snowmobile or ATV use. Usually single-track.
BLM sensitive species	Those wildlife and plant species (formerly Category 2) for which the USFWS has information available that indicates they might warrant listing, but more information is needed to propose them as endangered or threatened.

candidate species	Those wildlife and plant species (formerly Category 1) for which the USFWS has sufficient information on their biological status to propose them as endangered or threatened, but for which a proposed rule has not been developed.
cherry-stemmed road	A road that extends into a designated wilderness but is not considered to be part of the wilderness; it may provide access to private land or water. Because the wilderness boundary is drawn to exclude the road, the boundary resembles a cherry stem.
Class II airshed	Under the Prevention of Significant Deterioration Program, lands are divided into one of three classes. Class I areas have air that is pristine, such as in some national parks and wilderness areas, and almost no increase in air contaminant levels is allowed. Class II areas allow moderate development, and Class III areas allow extensive growth. The El Malpais NCA and National Monument are Class II areas.
closed basin	An area of land in which topography prevents the occurrence of visible surface water outflow. It is closed hydrologically if neither surface nor underground outflow can occur.
collector road	A BLM road that usually provides primary access to a large block of public land, and connects with arterial and local roads, or is an extension of a public road system. Such a road accommodates mixed traffic and serves many uses, generally receiving the highest volume of traffic of all roads in the BLM road system.
community	General term that can be applied to vegetation types of any size or longevity.
competition	Any interaction that is mutually detrimental to both participants, occurring between species that share limited resources.
composition	Typically refers to the makeup of a plant community whose individual plant species are designated as parts of a unified whole.
contiguous lands	Pertains to wilderness, lands or legal subdivisions having a common boundary. Lands having only a common corner are not contiguous.
critical habitat	Portions of the habitat of a wildlife population that, if destroyed or adversely modified, would result in a reduction of the population to a greater extent than destruction of other portions of the habitat. Also, a specific area formally designated by the Secretary of the Department of the Interior or Commerce that is determined to be essential to the survival and recovery of a threatened or endangered species or one proposed for listing.
cultural resource inventory classes	Class I--Existing Data Inventory: An inventory study of a specific area designed to provide a narrative overview from existing cultural resource information, and to provide a compilation of existing cultural resource site data on which to base the BLM's site record system. Class II--Sampling Field Inventory: A sample-oriented field inventory designed to locate and record, from surface and exposed profile indications, all cultural resources within a portion of a specific area. This inventory allows an

	objective estimate of the nature and distribution of cultural resources in a larger area, and is used in management and planning activities as an accurate predictor of cultural resources in a planning area. Alternatively, a Class II inventory is used for a specific project in which an intensive field inventory (Class III) is not practical or necessary.
	Class III--Intensive Field Inventory: An inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a specific area. Usually, upon completion of such inventories, no further cultural resource inventory work is needed in that area. Appropriate on small project areas, all areas to be disturbed, and primary cultural resource areas.
designated route	A vehicular route of travel that has been approved through the land-use planning process for motor vehicle use in accordance with the OHV area designation.
dirt tank (earthen tank)	Usually a permanent earthen structure for holding water temporarily, built in areas of high rainfall runoff such as arroyos, canyons or swales.
dispersed recreation	Refers to more spatially dispersed, resource-dependent (not facility-dependent) types of outdoor recreation such as fishing, hunting, backpacking and back-country exploring.
diversity	The relative degree of abundance of wildlife species, plant species, communities, habitats or habitat features per unit area; a combination of species richness and species evenness.
	Species Richness - The number of species per unit area within a community.
	Species Evenness - The distribution of individuals among the species, or between species.
easement	An interest in land that entitles the holder to enter upon land owned by another for a particular purpose. The easement confers a right of entry, not merely a permissive license that can be revoked at any time. An exclusive road easement grants control to the U.S. and may allow it to authorize third-party use and set road use rules.
ecosystem	The sum of the plant community, animal community and physical environment in a particular region or habitat.
endangered species	Federally Listed--Any species of animal or plant in danger of extinction throughout all or a significant portion of its range.
	State Listed (Group One)--Species whose prospect of survival or recruitment in a certain area of the state is in jeopardy in the foreseeable future.
	State Listed (Group Two)--Species whose prospect of survival or recruitment in a certain area of the state may become jeopardized in the foreseeable future.
Environmental Assessment (EA)	A concise public document for which a federal agency is responsible that serves to (1) briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of

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	No Significant Impact, (2) aid an agency's compliance with the National Environmental Policy Act (NEPA) when no EIS is needed, or (3) facilitate preparation of an EIS when needed. An EA includes brief discussions of the need for the proposal, of alternatives including the proposed action [as required by Sec. 102(2) of NEPA], of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.
ephemeral water	A body of water (e.g., stream, pond) that flows or exists only in direct response to precipitation. Such flow or existence is usually of short duration.
exchange	A trading of public land (surface or subsurface estate) that usually does not have high public value, for land in other ownerships that does have value for public use, management, protection and enjoyment. The exchange may benefit other agencies as well as the BLM.
exotic	Typically a non-native plant or animal.
fault	A fracture in the earth's crust accompanied by a displacement of one side with respect to the other.
FLPMA	Federal Land Policy and Management Act of 1976, which mandated the BLM Wilderness Review. (Often referred to and pronounced as "Flipma.")
forage (competitive)	Plants used as food by large herbivores such as cattle, and by large and small wildlife.
forb	Any herbaceous (non-woody) plant that is not a grass or grass-like plant.
grandfathered	Section 603(c) of FLPMA directs the BLM to manage lands under wilderness review "so as not to impair the suitability of such areas for preservation as wilderness . . ." However, Section 603(c) also provides a special exception to the "nonimpairment" criteria. Mining, grazing, and mineral leases existing on the date of approval of FLPMA (October 21, 1976) may continue in the same manner and degree even if these uses impair wilderness values. Such uses are "grandfathered."
grazing preference	The total number of AUMs of livestock grazing on public land apportioned and attached to base property owned or controlled by a permittee or lessee.
habitat	An area where a plant or animal lives. Sum total of environmental conditions in the area.
Habitat Management Plan (HMP)	A written and officially approved wildlife habitat plan for a specific geographic area of public land. An HMP identifies wildlife-habitat and related objectives, establishes the sequence of actions for achieving them, and outlines procedures for evaluating accomplishments.
hardening	Development of recreation areas to prevent or limit the impact of recreational use on soil, vegetation and other resources. Methods of development include construction of trails and designated use areas such as campsites and picnic sites.
herbaceous	Any flowering plant (i.e., grass, grass-like, or forb) except those that develop persistent woody stems above ground.

herbaceous vegetation	Having the nature of an herb, grass or grass-like plant whose stem withers to the ground after each season's growth.
historical cultural resources	All mines, ranches, towns, resorts, railroads, trails and other evidence of human use in the United States from the entrance of the Spanish to 1932.
igneous rocks	Rocks formed by solidification of heat-melted rock below the earth's crust.
inholding	Private or state-owned land inside the boundary of a wilderness study area but excluded from it.
intensive inventory	The second major step in the BLM wilderness review process. Roadless areas are carefully inventoried for wilderness characteristics, resulting in the identification of wilderness study areas.
intrusion	A feature (landform, vegetation, or structure) that is generally considered out of context because of excessive contrast and disharmony with the characteristic landscape.
jacal	A construction technique that involves building a brush superstructure, then plastering it with mud.
lithic	A stone or rock exhibiting human modification. Generally applies to projectile points, scrapers and chips, rather than to ground stone.
lithic scatter	A prehistoric cultural site at which flakes, cores and stone tools are located, indicating the manufacture or use of tools.
local road	This usually serves a smaller area than a collector road, and connects to collector roads or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer users. Often called two-tracks, ways, or back-country routes, they are usually not maintained.
malpais	Rough country composed of dark basaltic lava.
minimum tool rule	Tools, equipment or structures may be used by land management agencies when they are the minimum needed to protect wilderness resources, or in emergency situations for the health and safety of visitors. The chosen tool, equipment or structure should be the one that least degrades wilderness values temporarily or permanently.
multiple use management	The management of the various surface and subsurface earth resources so they are used in the combination that best meets the present and future needs of the American people. Consists of managing the following resources and uses: domestic livestock grazing, fish and wildlife development and use, industrial development, mineral production, human occupancy, outdoor recreation, timber production, watershed protection, and preservation of wilderness and other public values.
noxious	An undesirable plant or animal that potentially produces a harmful or undesirable chemical compound.

off-highway vehicle (OHV)	Any motorized vehicle designed for or capable of cross-country travel on or over land, water, sand, snow, ice, marsh, swampland or other terrain.
OHV use	Any use by a motorized vehicle off paved roads, or roads and trails that are regularly and frequently maintained for general transportation purposes.
perennial stream	A stream or portion of a stream that flows continuously.
petroglyph	A form of rock art manufactured by incising, scratching or pecking designs into rock surface.
playa	The usually dry and level lake plain that occupies the lowest part of a closed depression.
prescribed burning	Controlled application of fire, either deliberately or by natural ignition, to wildland fuels in either their natural or modified state. Such burning is done under specified environmental conditions that allow the fire to be confined to a certain area, while at the same time producing the effects required to meet planned resource management objectives.
primitive and unconfined recreation	In the BLM wilderness review process, refers to those activities that provide dispersed, undeveloped recreation not requiring facilities or motorized equipment.
public land	Any land and interest in land owned by the United States and administered by the Secretary of the Interior through the BLM, without regard to how the U.S. acquired ownership. The exceptions are lands held on the Outer Continental Shelf; held for the benefit of Indians, Aleuts and Eskimos; and those for which the U.S. retains the minerals, but the surface is private.
public land laws	The body of laws that regulate the administration of the public land and its resources.
rangeland	Land used for grazing by livestock and big-game animals on which the vegetation is dominated by grasses, grass-like plants, forbs or shrubs.
rangeland improvement	Any activity or program on or relating to rangelands that is designed to improve production of forage, change vegetative composition, control patterns of use, provide water, stabilize soil and water conditions, and provide habitat for livestock or wildlife.
raptor	Any predatory bird (e.g., falcon, hawk, eagle, owl) that has feet with sharp talons adapted for seizing prey and a hooked beak for tearing flesh.
reconnaissance survey	Cultural resources field survey that is less systematic, less intensive or otherwise does not fully meet inventory standards (refer to "cultural resource inventory classes--Class II and Class III"). May be useful for checking Class I or II inventory conclusions, or for developing recommendations about further inventory needs in previously unsurveyed areas.
right-of-way	An authorization to use public land for a specified purpose such as a road, powerline, pipeline, water well or communication site.

riparian	Relating to, living or located on the bank of a watercourse (river, stream) or lake.
riparian functional ratings	Properly Functioning Condition--Riparian areas are functioning properly when adequate vegetation, landform or large woody debris is present to (1) reduce the stream energy associated with high waterflows, thereby decreasing erosion and improving water quality; (2) filter sediment, capture bedload and aid floodplain development; (3) improve floodwater retention and groundwater recharge; (4) develop root masses that stabilize streambanks against cutting action; (5) develop diverse ponding and channel characteristics to provide the habitat, water depth, duration and temperature necessary for fish production, waterfowl breeding and other uses; and (6) support greater biodiversity. Functional--At Risk--Riparian areas in functional condition, but an existing soil, water, or vegetative attribute makes them susceptible to degradation. Nonfunctional--Riparian areas clearly not providing adequate vegetation, landform, or large woody debris to reduce the stream energy associated with high waterflows. These areas do not decrease erosion, improve water quality, or have the other characteristics listed above.
riparian/wetland vegetation	Vegetation that occurs in or adjacent to drainage ways or their floodplains.
roadless	Refers to the absence of roads that have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road.
roadless area	An area that is roadless and bounded by a road, the edge of a right-of-way, other land ownership, or a significant imprint of humans.
rock art (petroglyph or pictograph)	A general term for the pecking, incising or painting of designs onto rock surfaces.
seral stage	The developmental stage of a plant community in which the community exhibits some directional, cumulative, non-random change in species composition over a period of 1 to 500 years.
sedimentary rocks	Rocks formed by the accumulation of matter suspended in liquid.
Sikes Act program	A program among the U.S. Forest Service, BLM and New Mexico Department of Game & Fish wherein $5 is collected from each hunter and fisher using Forest Service and BLM lands in New Mexico. The collected funds go back to the agencies to restore and improve fish and wildlife habitats.
solitude	For the purpose of the BLM wilderness review process, defined as the state of being alone or remote from habitation. An isolated, unfrequented or secluded place with the opportunity to avoid the sights, sounds and evidence of humans and their activities.
special-status plants & animals	Species that are (1) officially listed, proposed for listing, or candidates for listing as threatened or endangered by the Secretary of the Interior under the

	provisions of the Endangered Species Act, (2) listed or proposed for listing by a state in a category implying potential endangerment or extinction, and (3) designated by each BLM State Director as sensitive.
split estate	A situation in which the mineral (subsurface) estate is owned or controlled by a party other than the owner of the surface land area.
steppe	Arid land characterized as level and without forests, usually in large tracts, regions of extreme temperature range, and windblown soil.
storage tank	A permanent water-holding structure used to supply water to troughs or pipelines.
supplemental values	Features of ecological, geological, or other scientific, educational, scenic or historical value that may be present in a wilderness inventory unit. These are not necessary criteria for wilderness suitability, as stated in the Wilderness Act of 1964, but must be assessed during the intensive wilderness inventory.
thinning	A forestry process used to remove a portion of the trees or shrubs within a stand through mechanical means.
trail	A route of travel usually associated with recreational use and considered a recreational facility. May be designed and built for one or more uses, or developed through continuous use.
trailhead	The parking area, signs and other facilities available at the beginning and/or end of a trail.
threatened species	Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.
vegetation treatments	Methods used to control the growth and spread of undesirable vegetation by chemical or mechanical means, or by fire.
vehicular way	A two-wheel track maintained solely by the passage of vehicles; does not constitute a road or route (which has been maintained or improved by mechanical means, such as hand or power machinery or tools).
visual resource management (VRM) classes	VRM classes are based on relative visual ratings of inventoried lands. Each describes the different degree of modification allowed to the basic elements of the landscape. (Refer to Appendix E for the minimum management objectives for each class.)
volcanic rock	A heat-formed rock resulting from volcanic action at or near the earth's surface.
wilderness	As defined in Section 2(c) of the Wilderness Act of 1964, "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Such an area (1) generally appears to have been affected primarily by the forces of nature, with the imprint of humans substantially unnoticeable;

	(2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) contains at least 5,000 acres of land for its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic or historical value. Also, an area formally designated by the Congress as part of the National Wilderness Preservation System.
wilderness characteristics	Those traits of wilderness described in Section 2(c) of the Wilderness Act, including size, naturalness, solitude, primitive and unconfined types of recreation, and supplemental values.
wilderness inventory	A written evaluation of public land showing on a map those lands that meet the wilderness criteria as established under Section 603(a) of FLPMA and Section 2(c) of the Wilderness Act. Once an inventory has been done, the lands meeting the criteria are released from further wilderness consideration.
wilderness review	The entire wilderness inventory, study and reporting phases of the BLM's wilderness program.
wilderness study	The process of analyzing and planning opportunities for wilderness preservation, along with other resource uses, within the BLM's land-use planning system.
Wilderness Study Area (WSA)	A roadless area that has been inventoried and found to have wilderness characteristics as described in Section 603 of FLPMA and Section 2(c) of the Wilderness Act.
wildlife	Includes all species of mammals, birds, crustaceans, amphibians, reptiles, or their offspring or eggs, that whether raised in captivity or not, are normally found in a wild state. Feral horses and burros are excluded.
withdrawal	An action that restricts the use of public land and segregates it from some or all of the public land and/or mineral laws.

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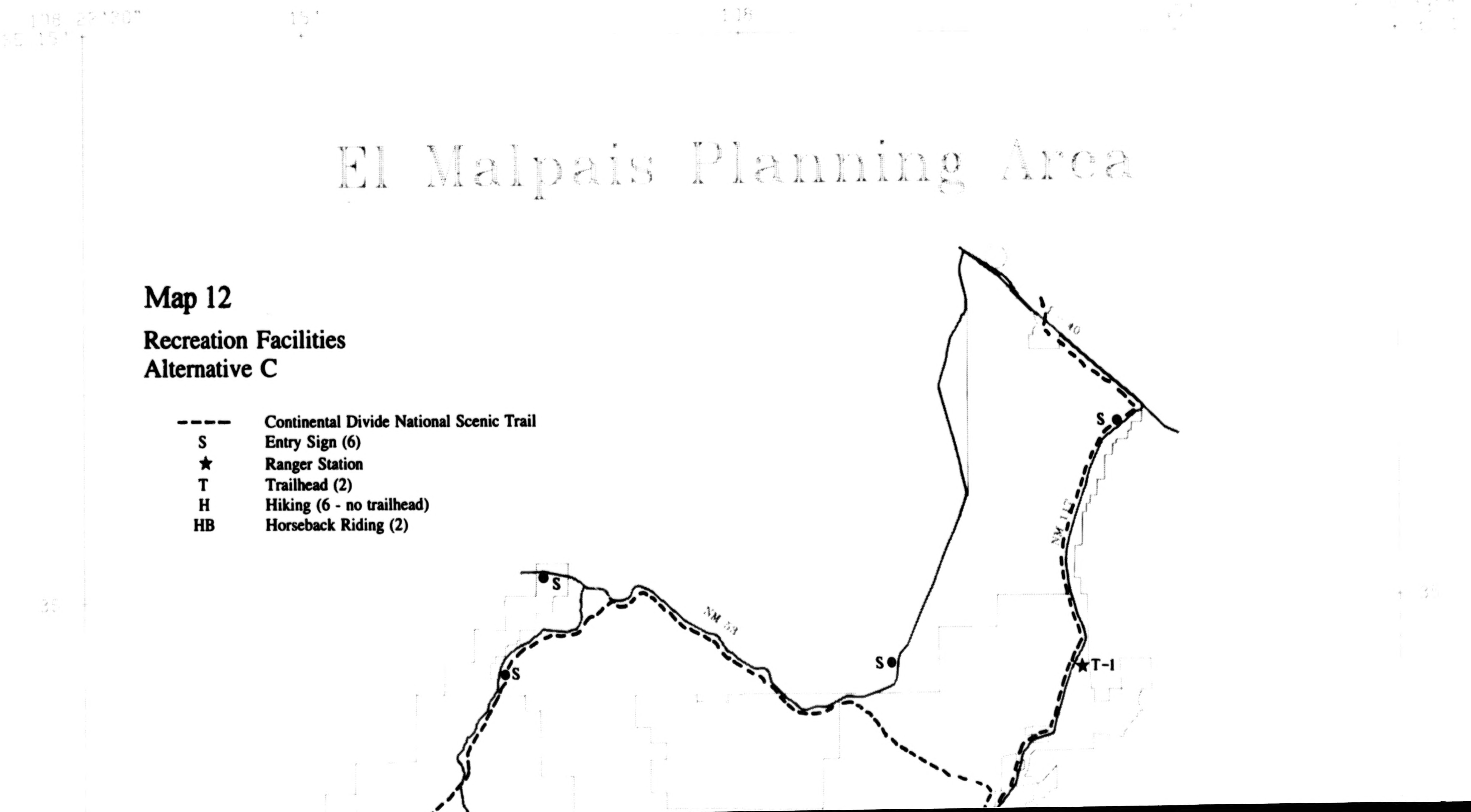
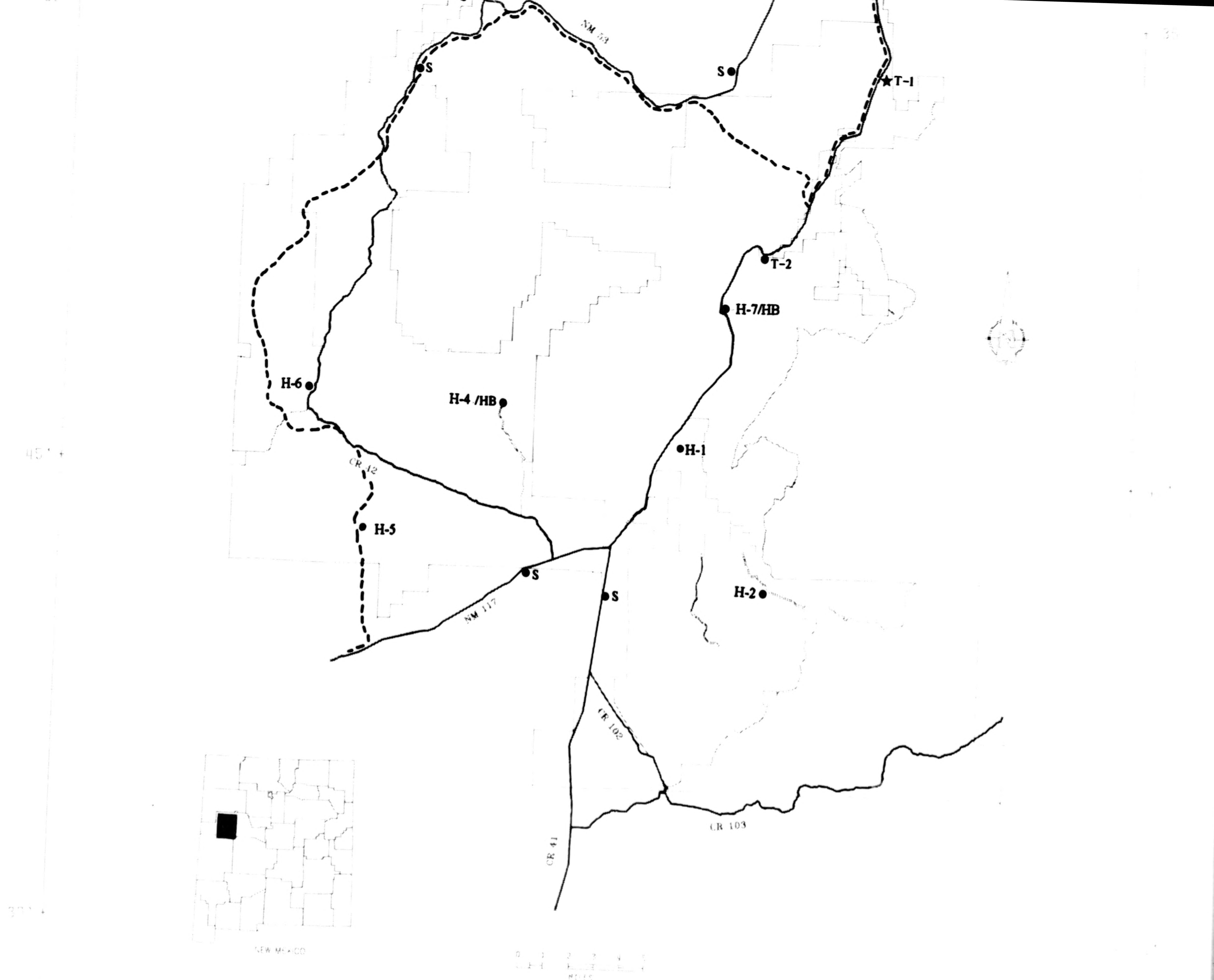


El Malpais Planning Area

Map 12

Recreation Facilities
Alternative C

- - - -	Continental Divide National Scenic Trail
S	Entry Sign (6)
★	Ranger Station
T	Trailhead (2)
H	Hiking (6 - no trailhead)
HB	Horseback Riding (2)



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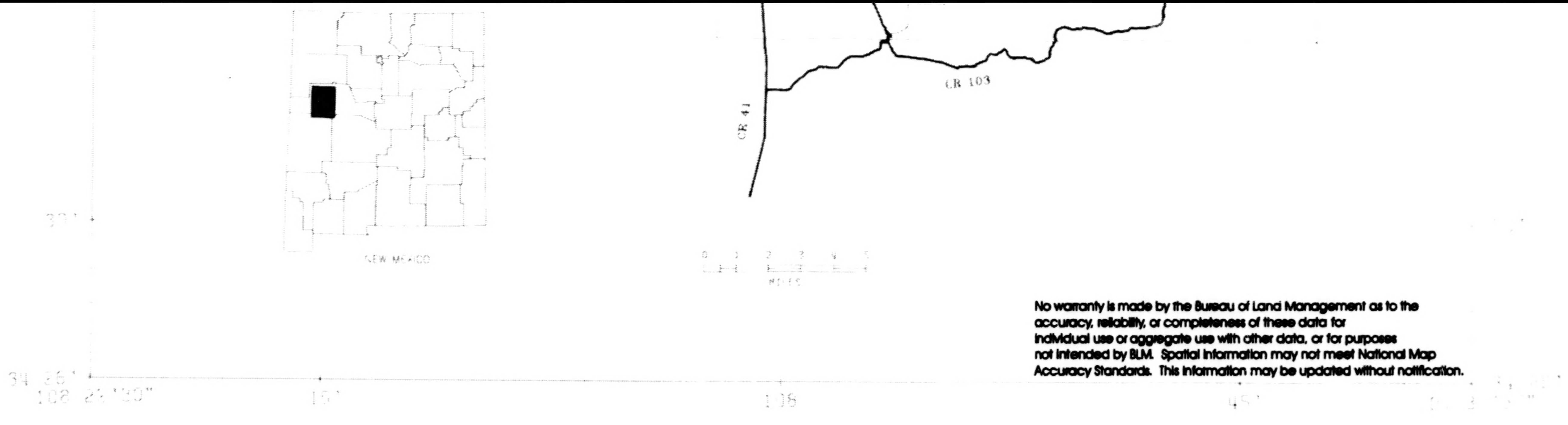

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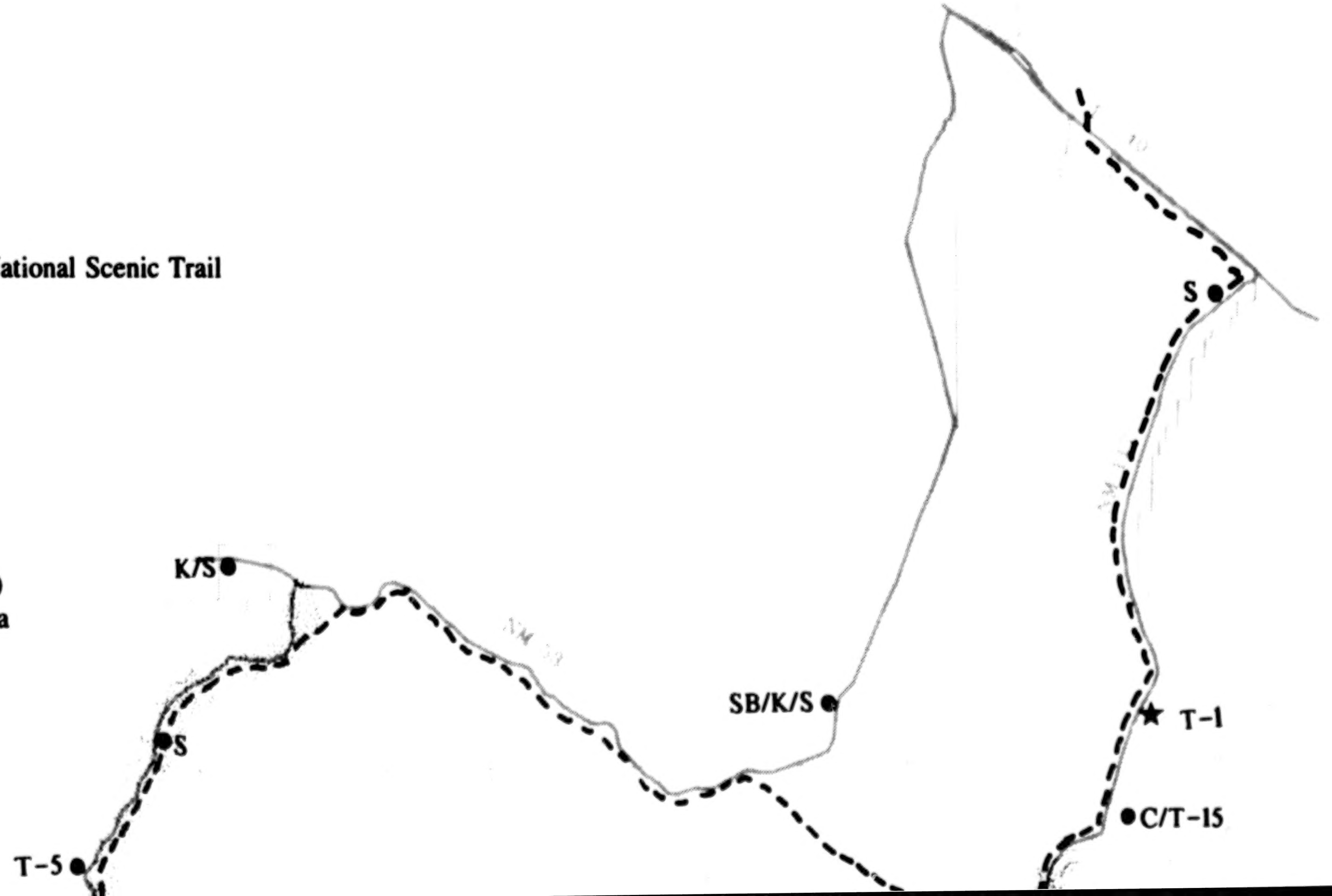
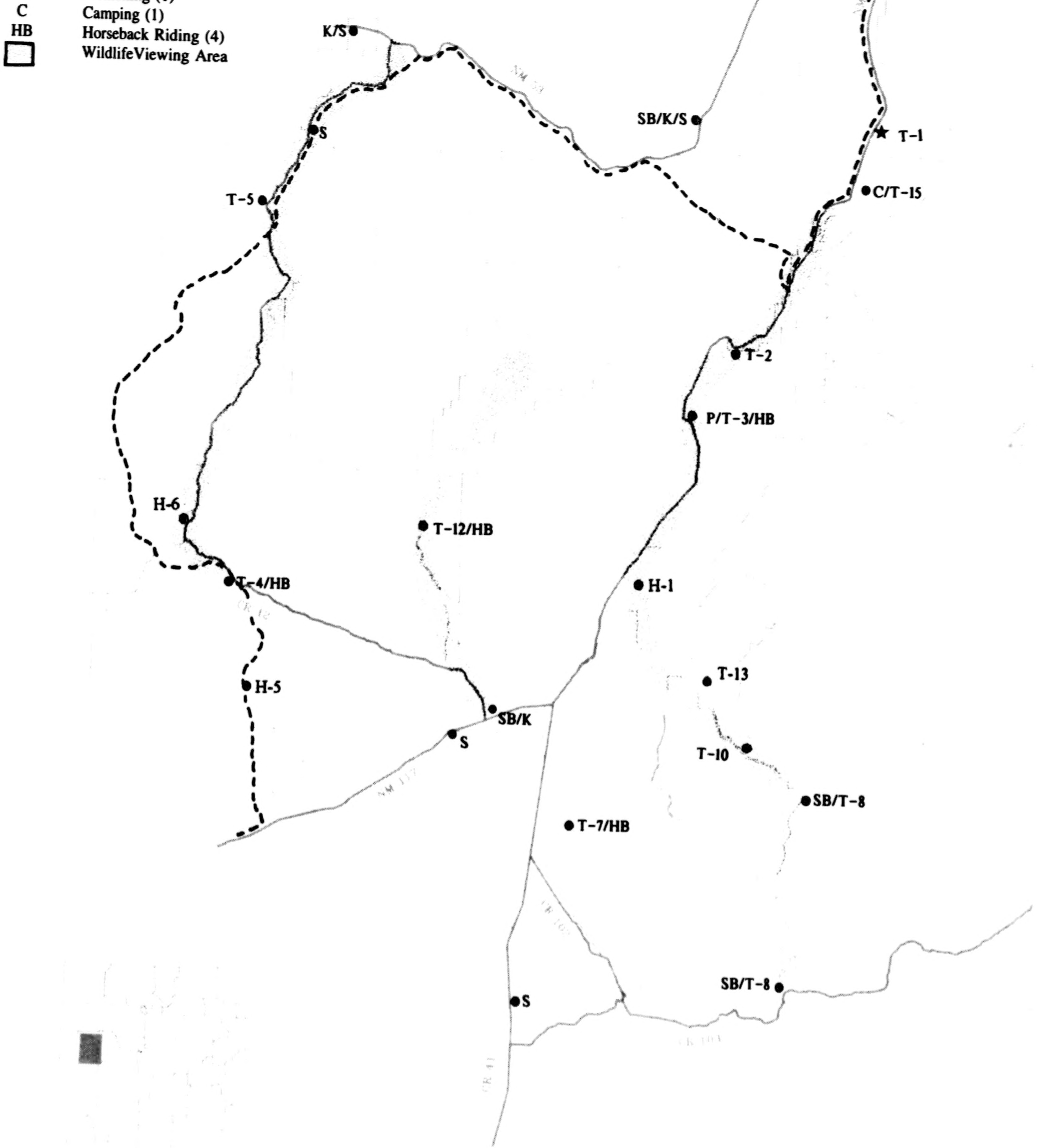
El Malpais Planning Area

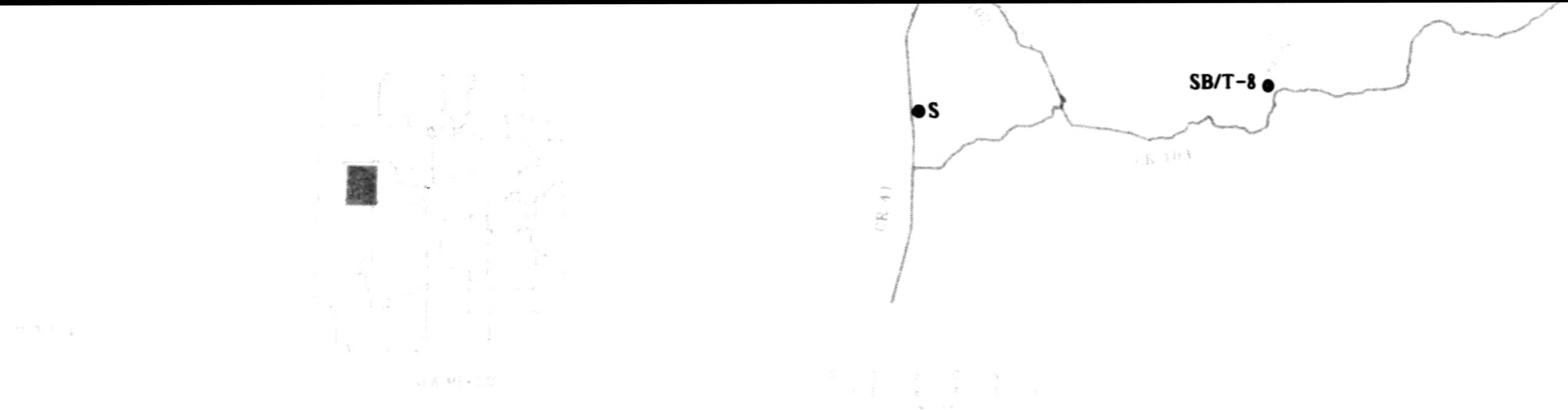
Map 13

Recreation Facilities
Alternative D

----	Continental Divide National Scenic Trail
S	Entry Sign (6)
SB	Byway Sign (4)
K	Kiosk (3)
★	Ranger Station
T	Trailhead (11)
H	Hiking (3)
P	Picnicking (1)
C	Camping (1)
HB	Horseback Riding (4)
☐	WildlifeViewing Area




C Camping (1)
HB Horseback Riding (4)
WildlifeViewing Area
K/S
SB/K/S
S
T-1
C/T-15
T-5
T-2
P/T-3/HB
H-6
T-12/HB
T-4/HB
H-1
H-5
T-13
SB/K
S
T-10
SB/T-8
T-7/HB
S
SB/T-8



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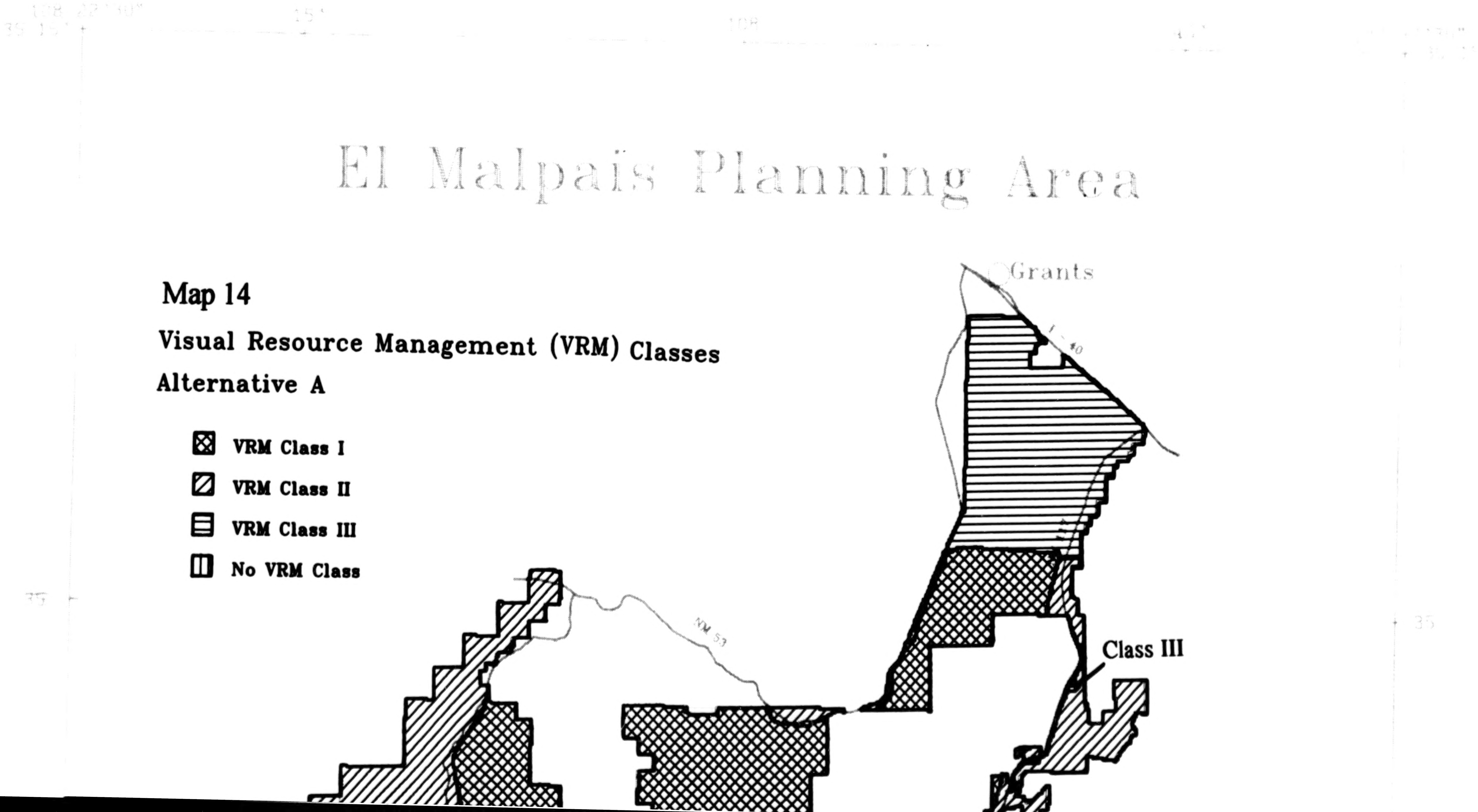
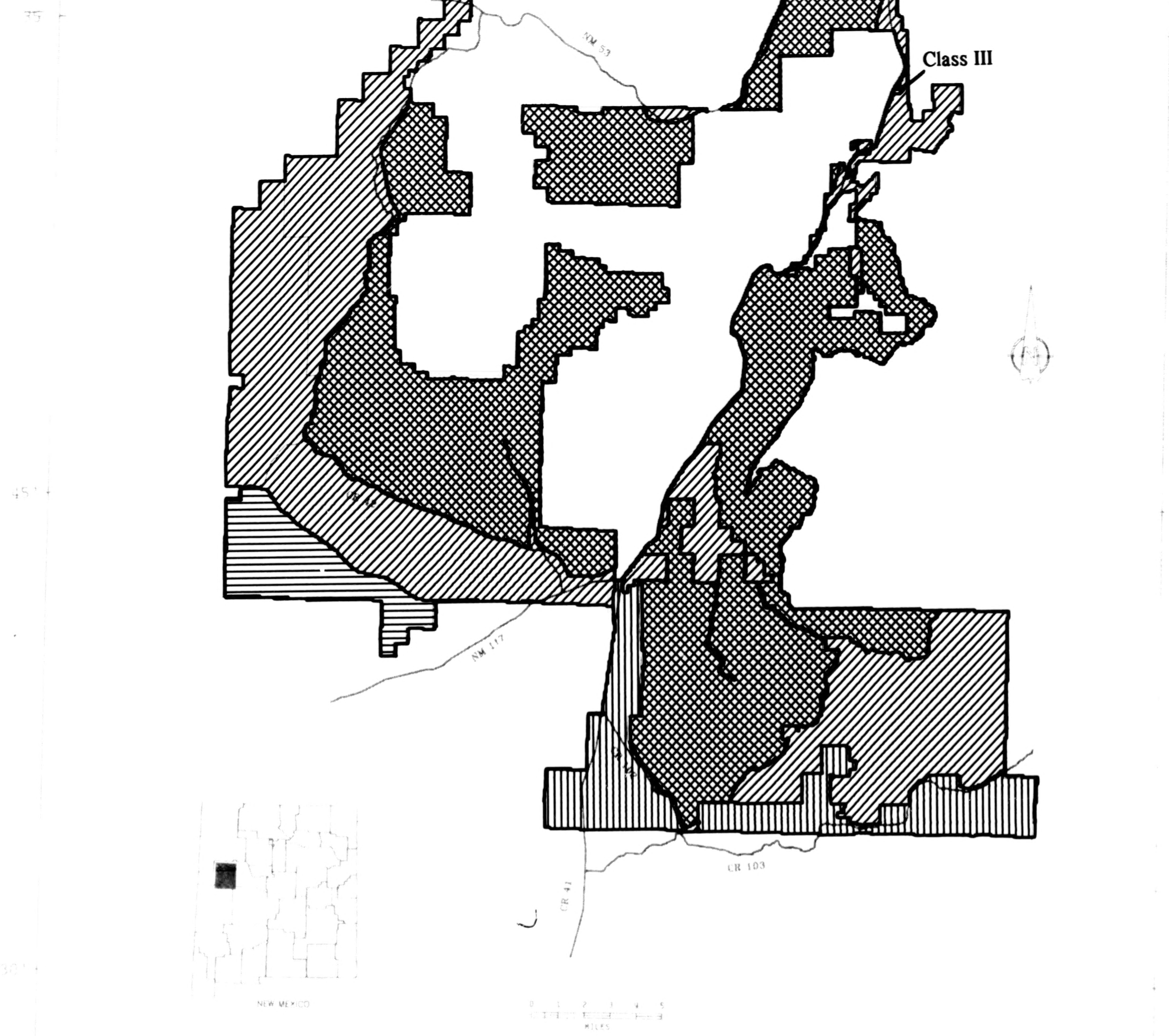


Map 14

Visual Resource Management (VRM) Classes

Alternative A



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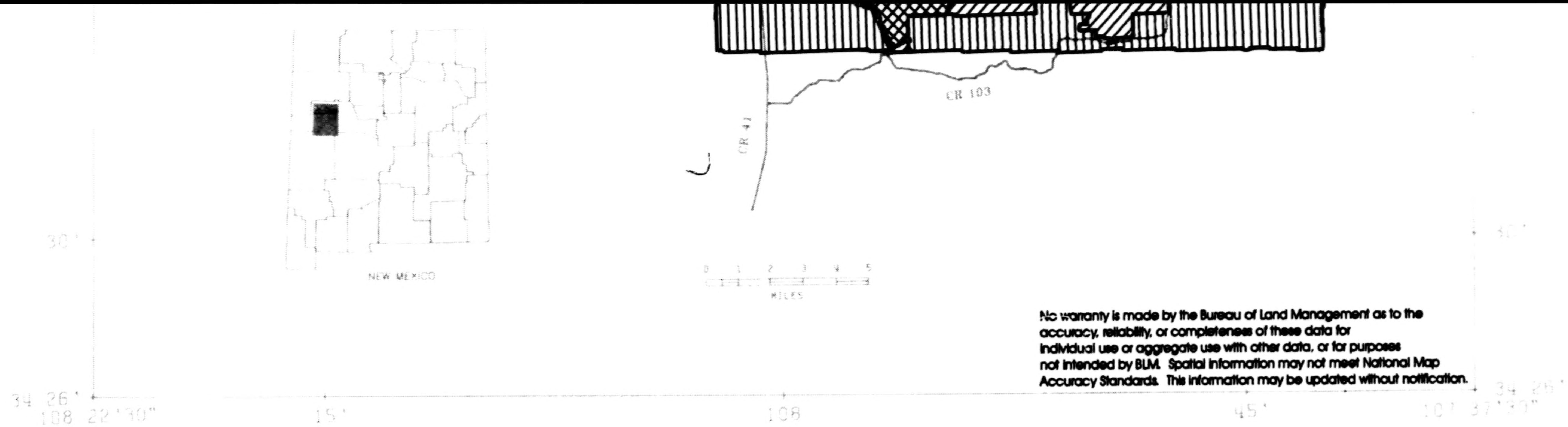

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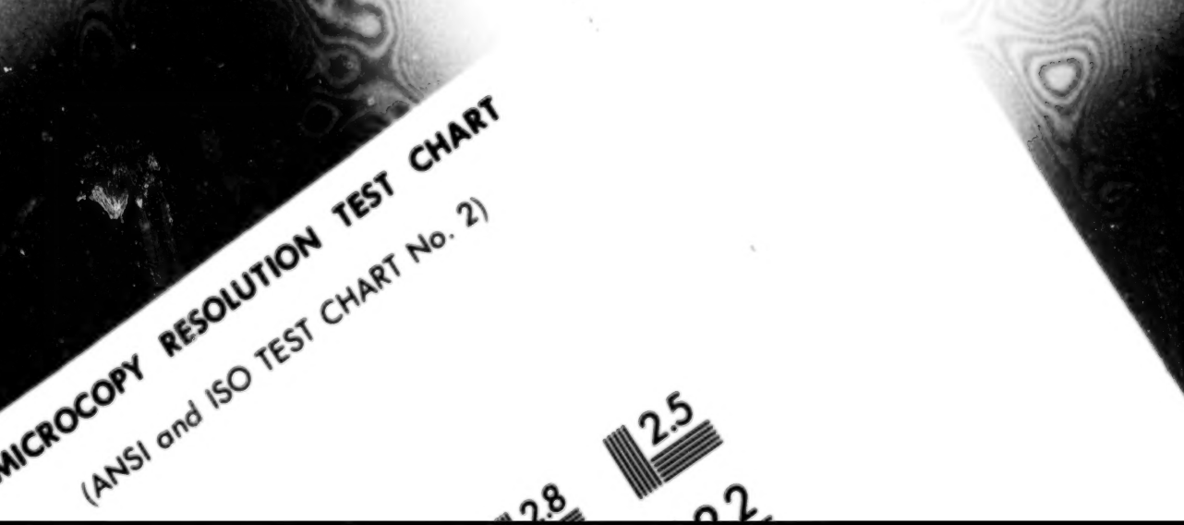
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(ANSI and ISO TEST CHART No. 2)
2.8
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2.2

MICROCOPY RESOLUTION TEST CHART
(ANSI and ISO TEST CHART No. 2)

1.0
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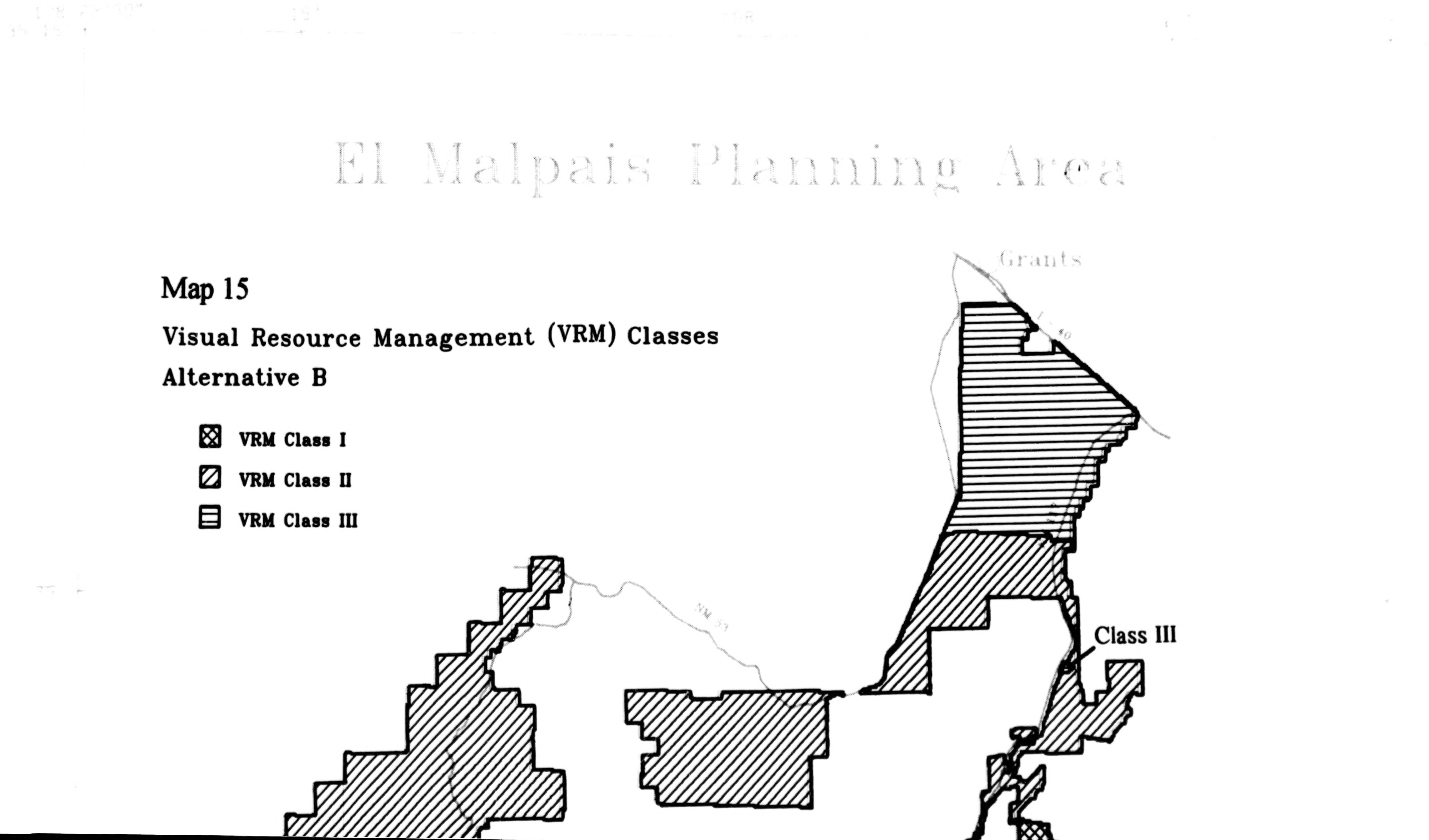
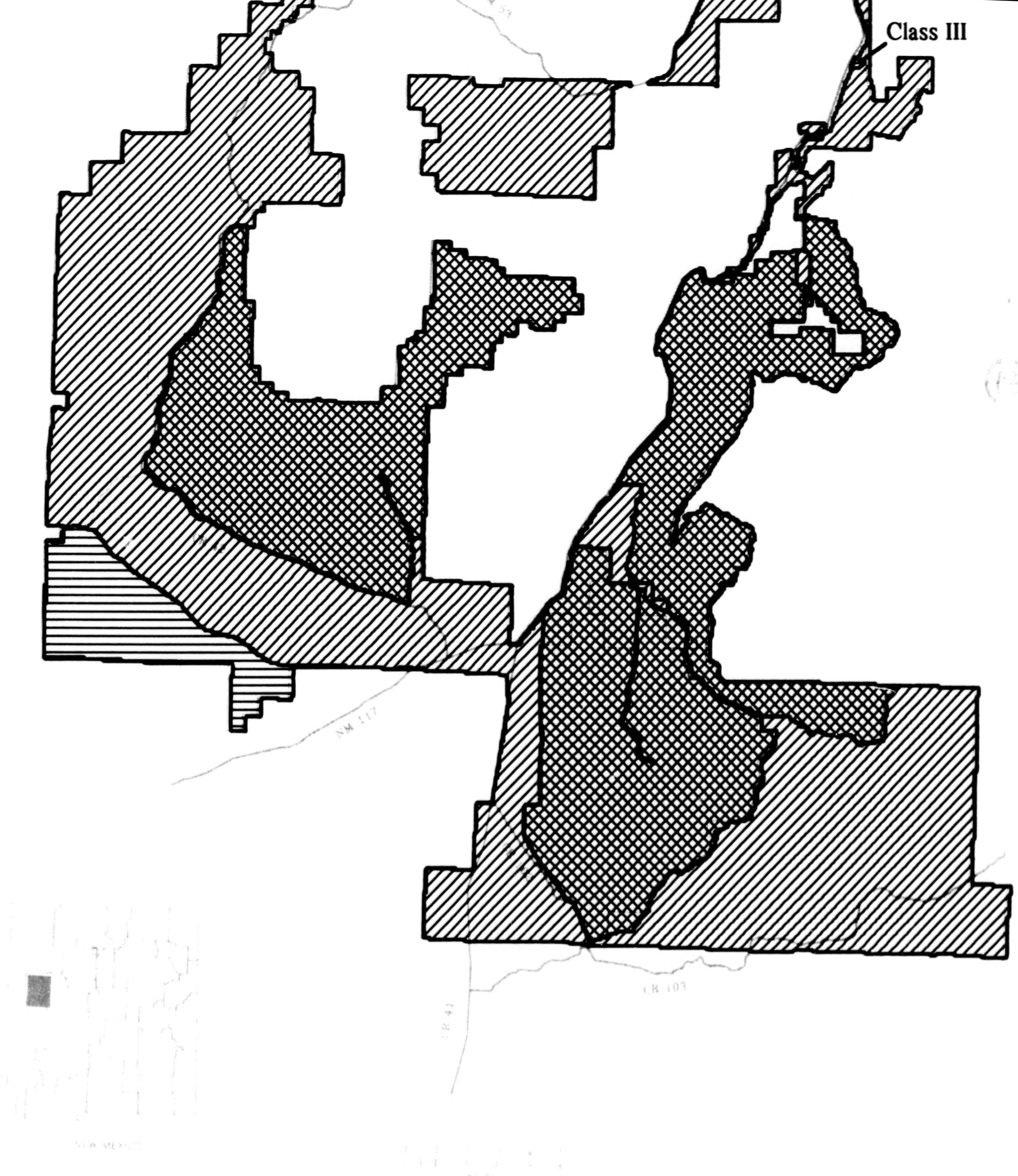


Map 15

Visual Resource Management (VRM) Classes

Alternative B



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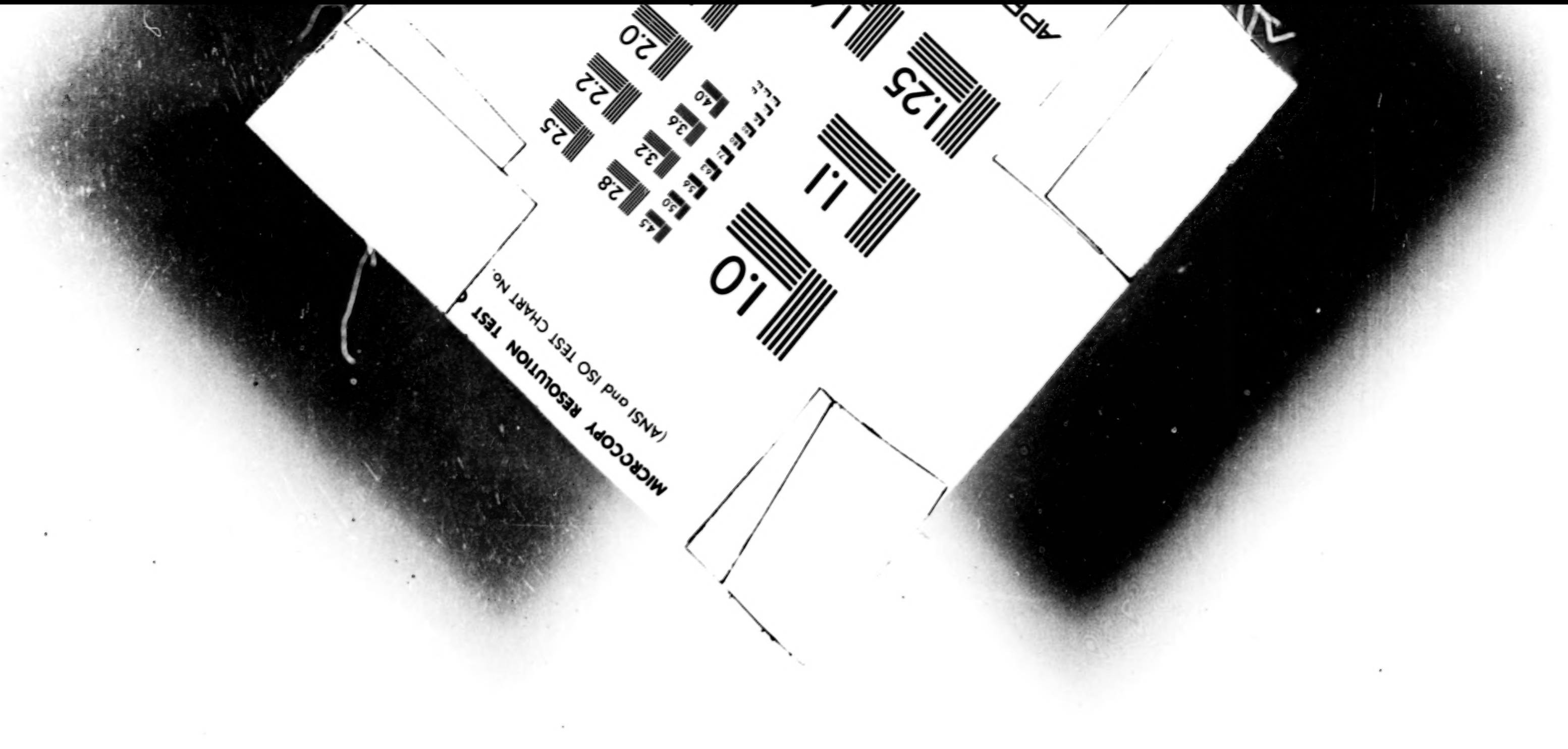
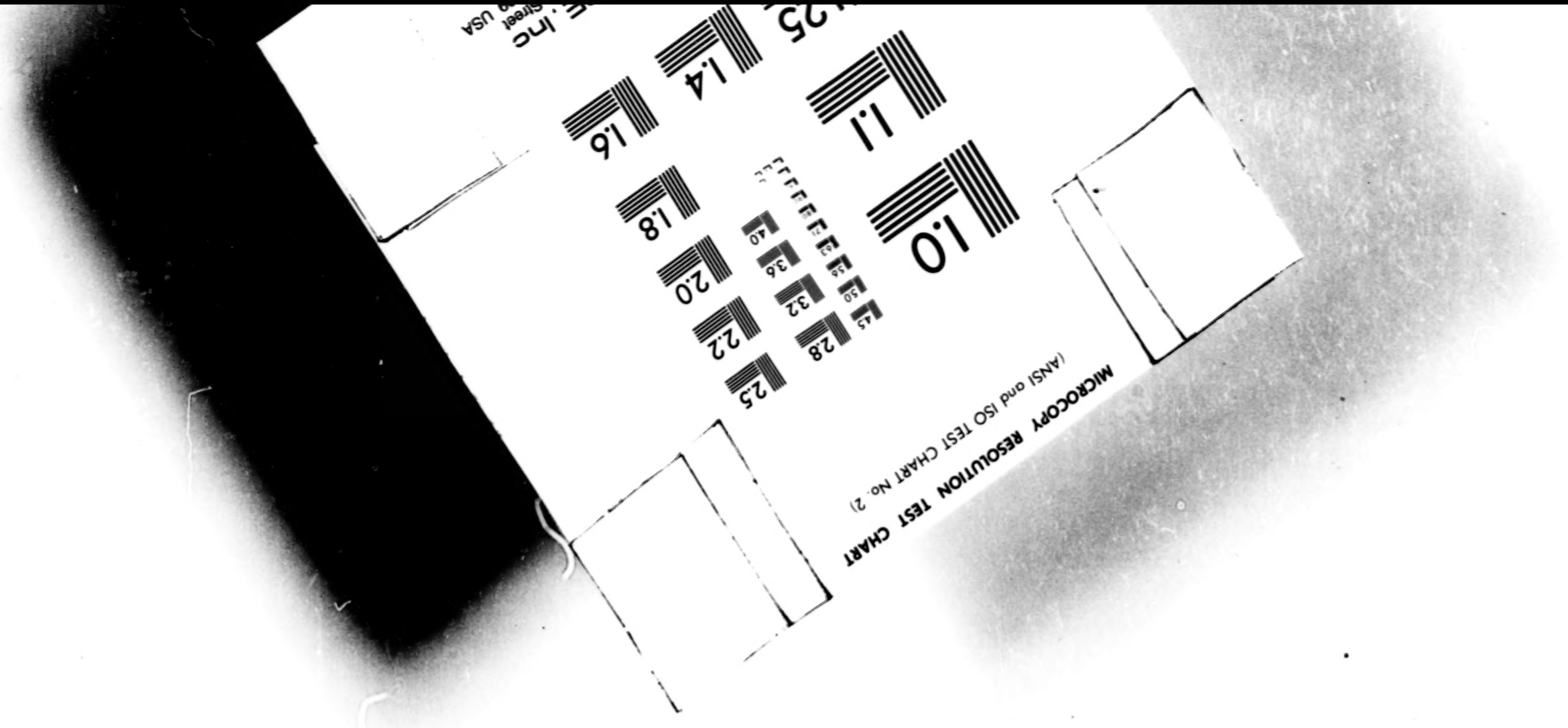
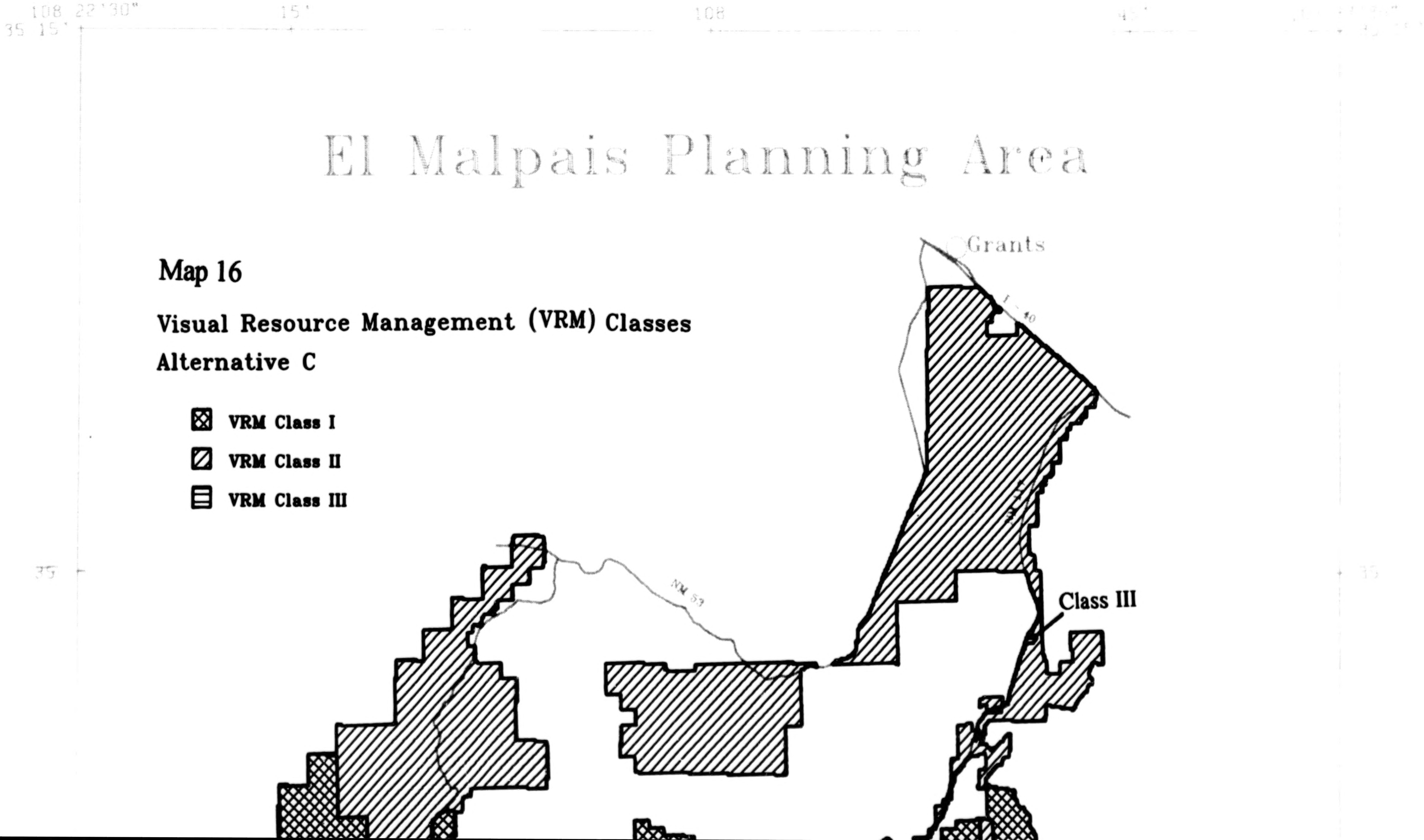




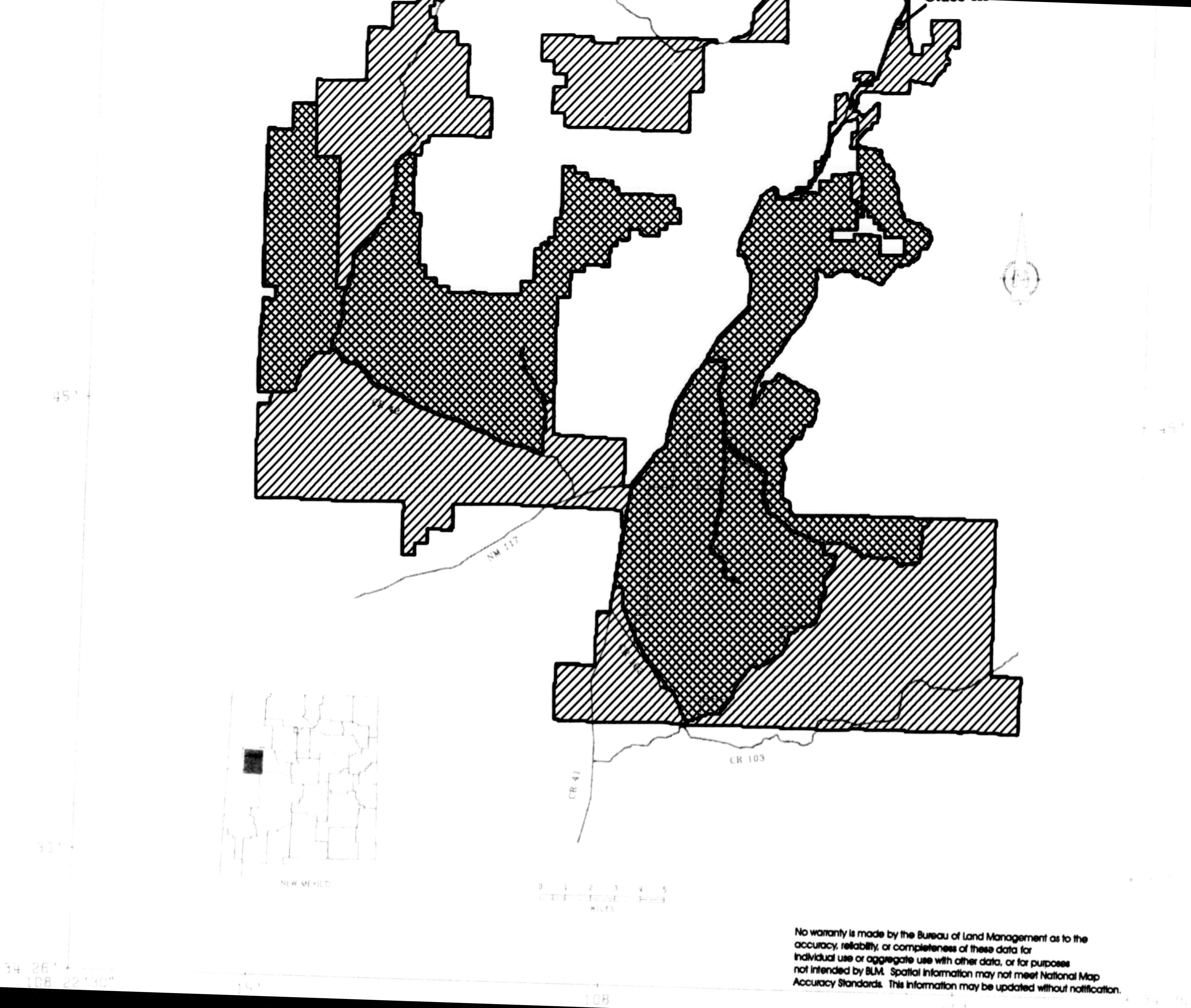


El Malpais Planning Area

Map 16

Visual Resource Management (VRM) Classes Alternative C

- ▩ VRM Class I
- ▨ VRM Class II
- ▤ VRM Class III



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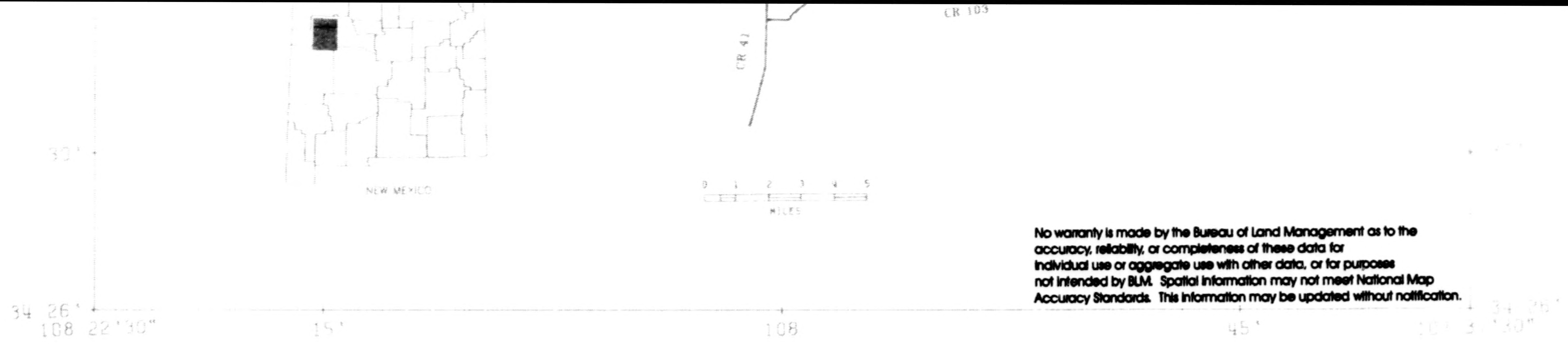

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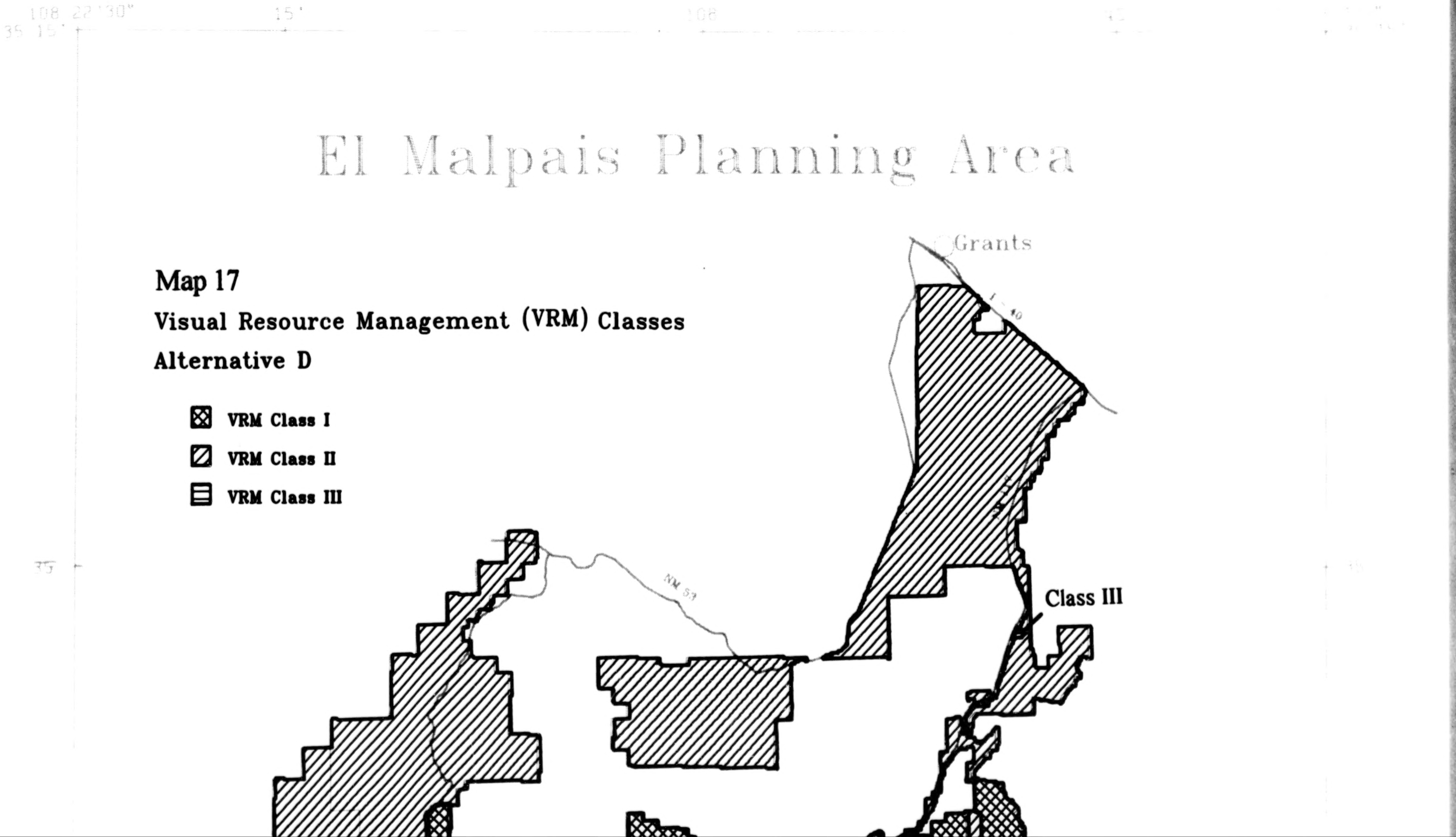
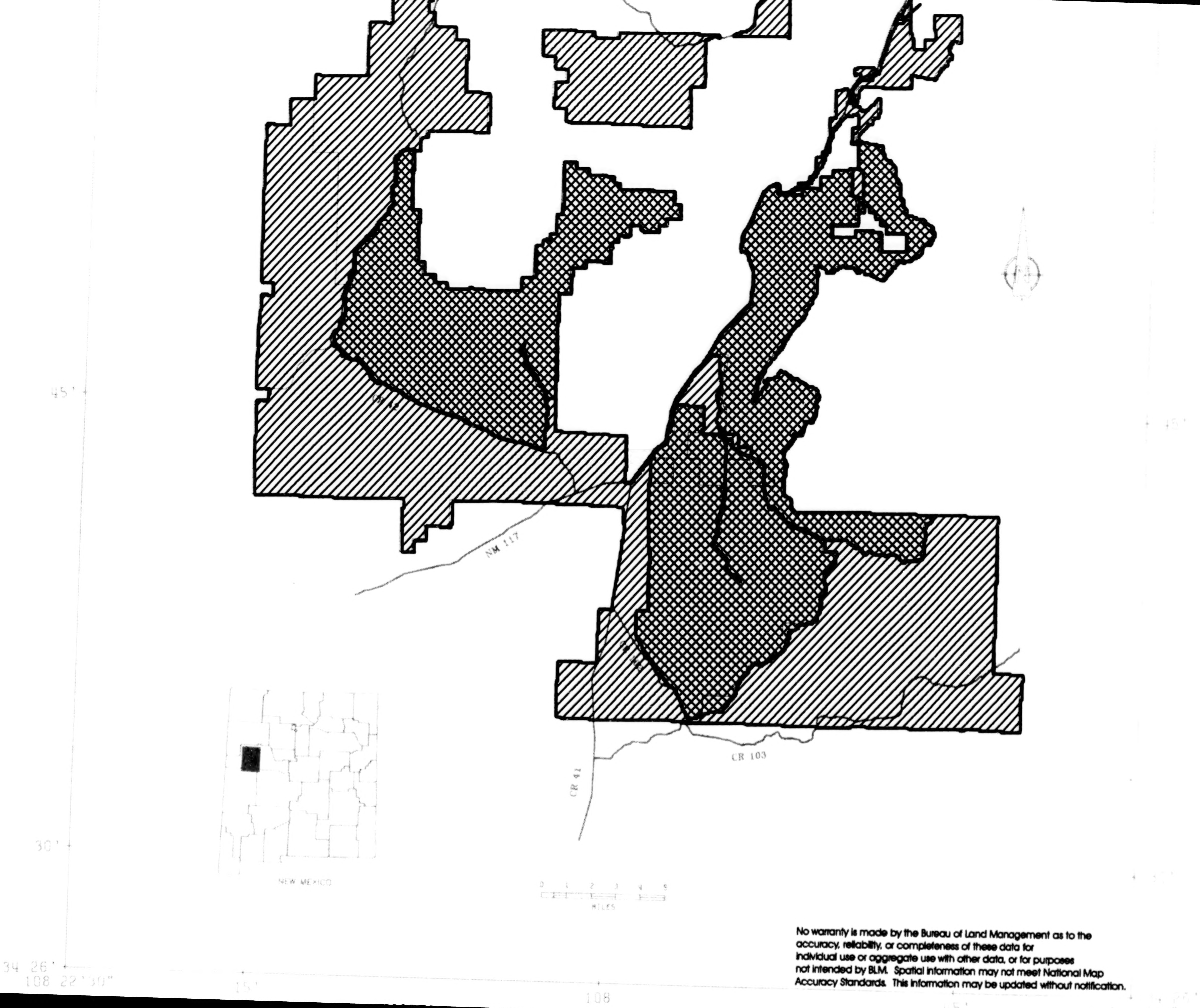


Map 17

Visual Resource Management (VRM) Classes

Alternative D



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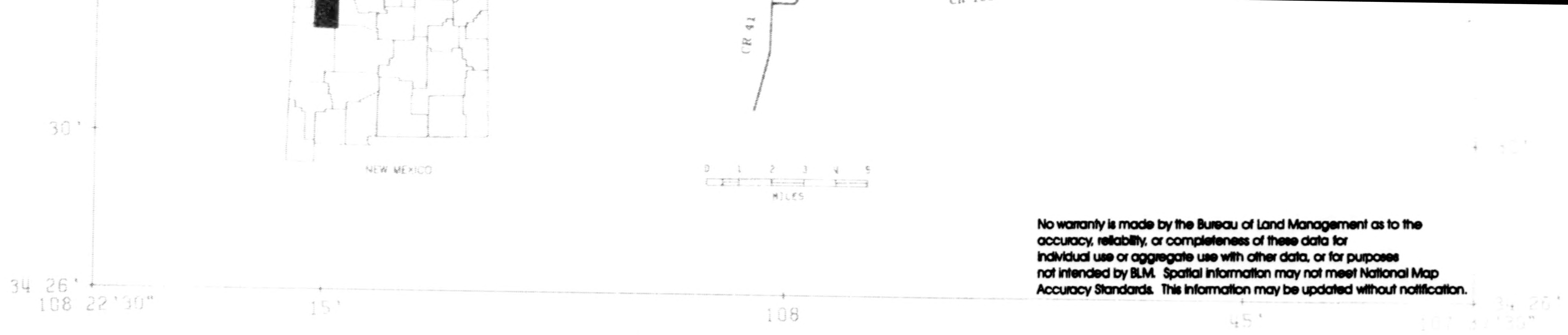

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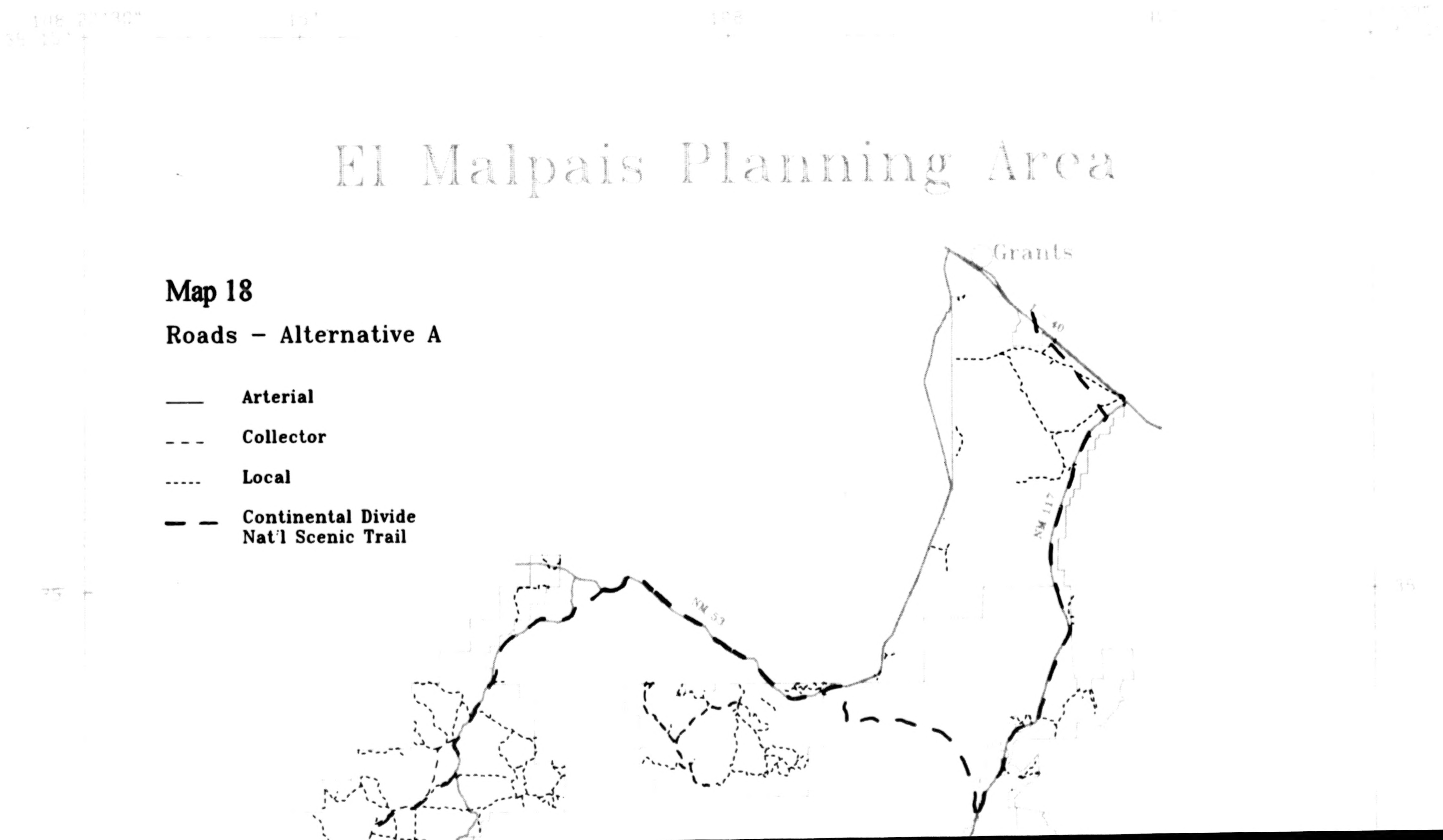
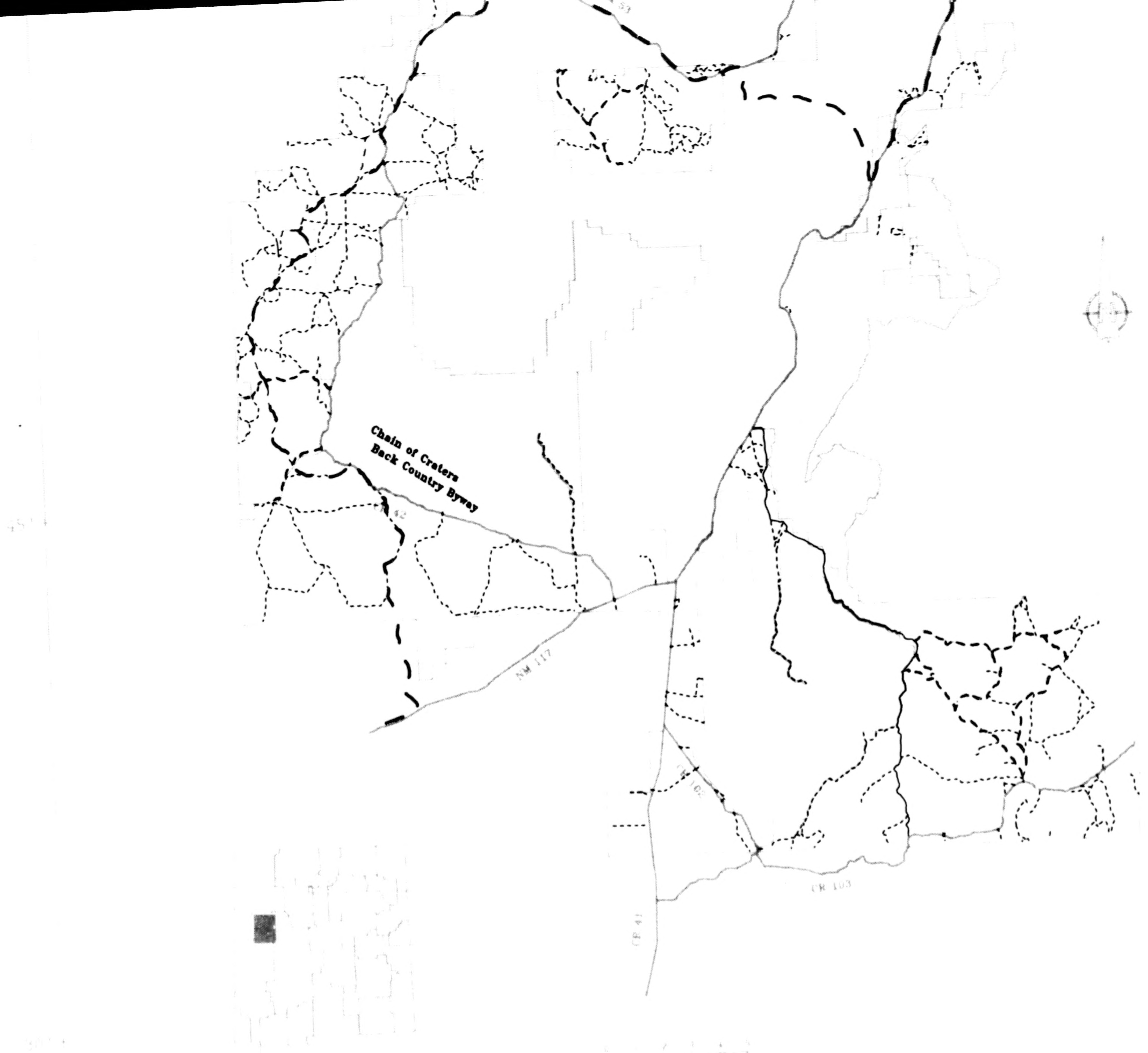


Map 18

Roads – Alternative A



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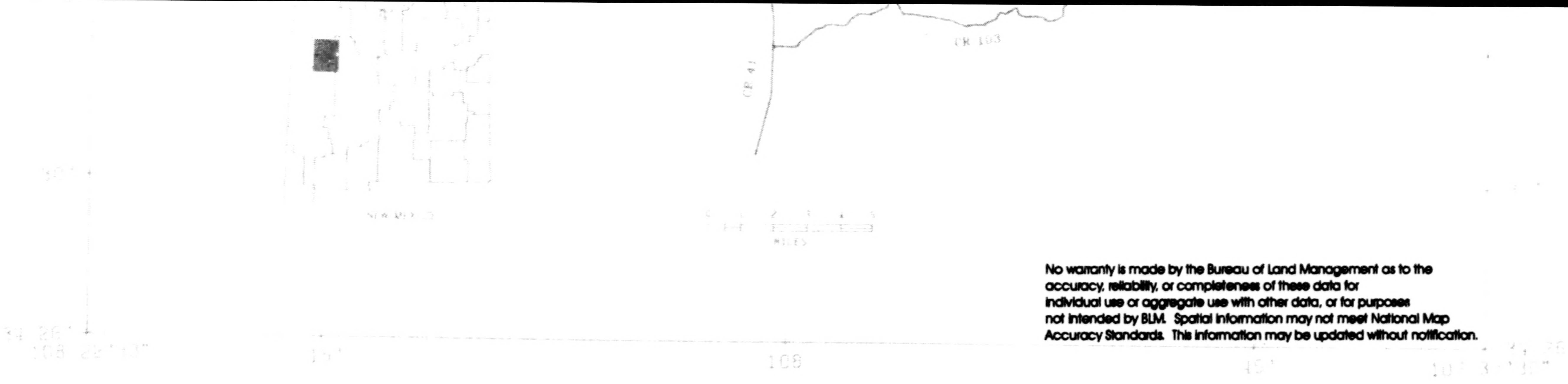

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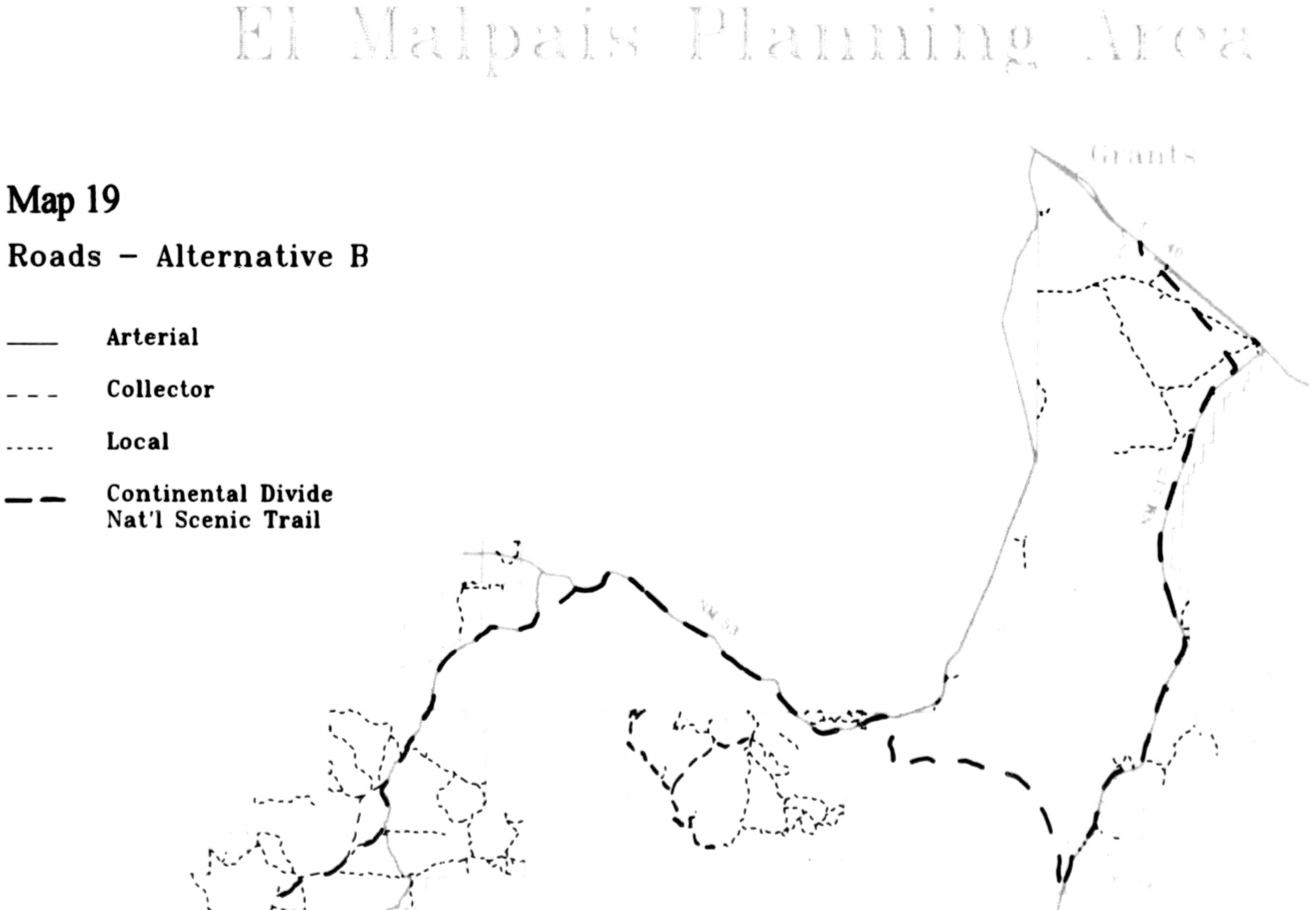
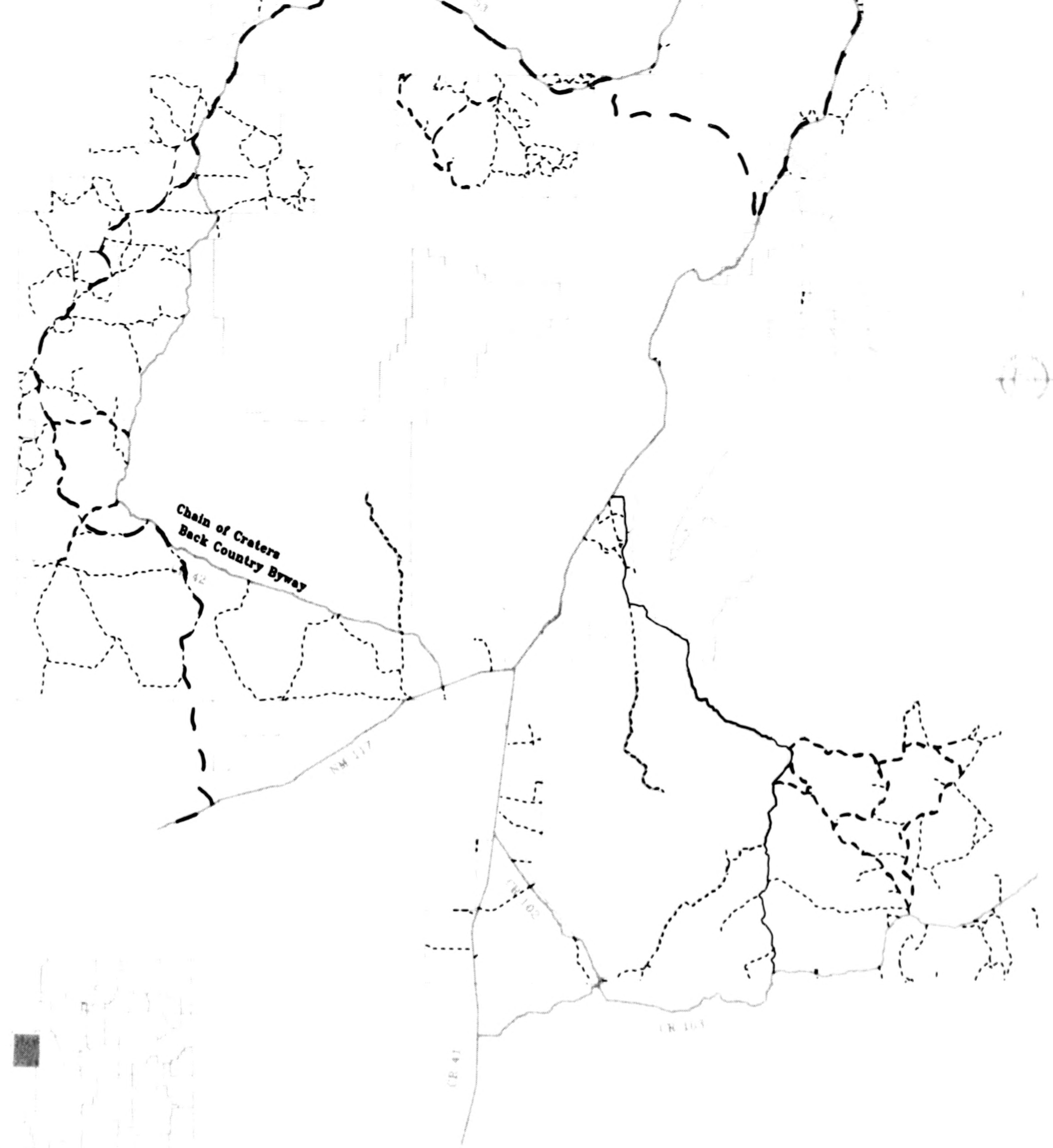
Map 19

Roads – Alternative B





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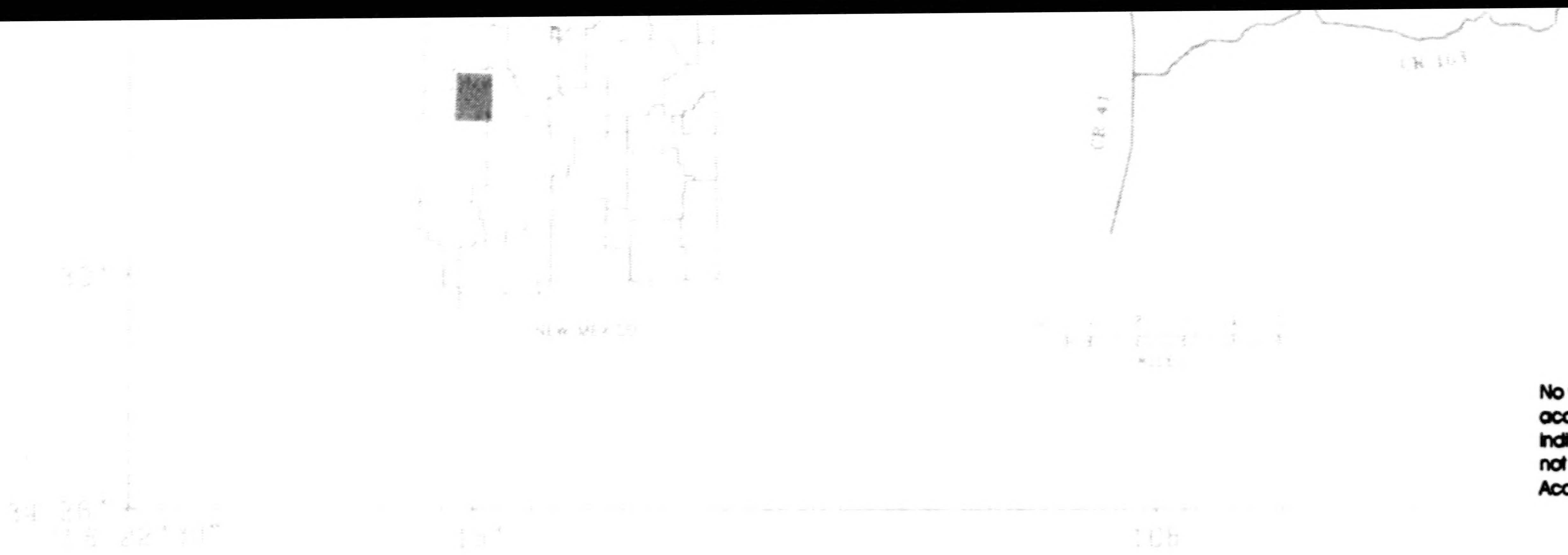

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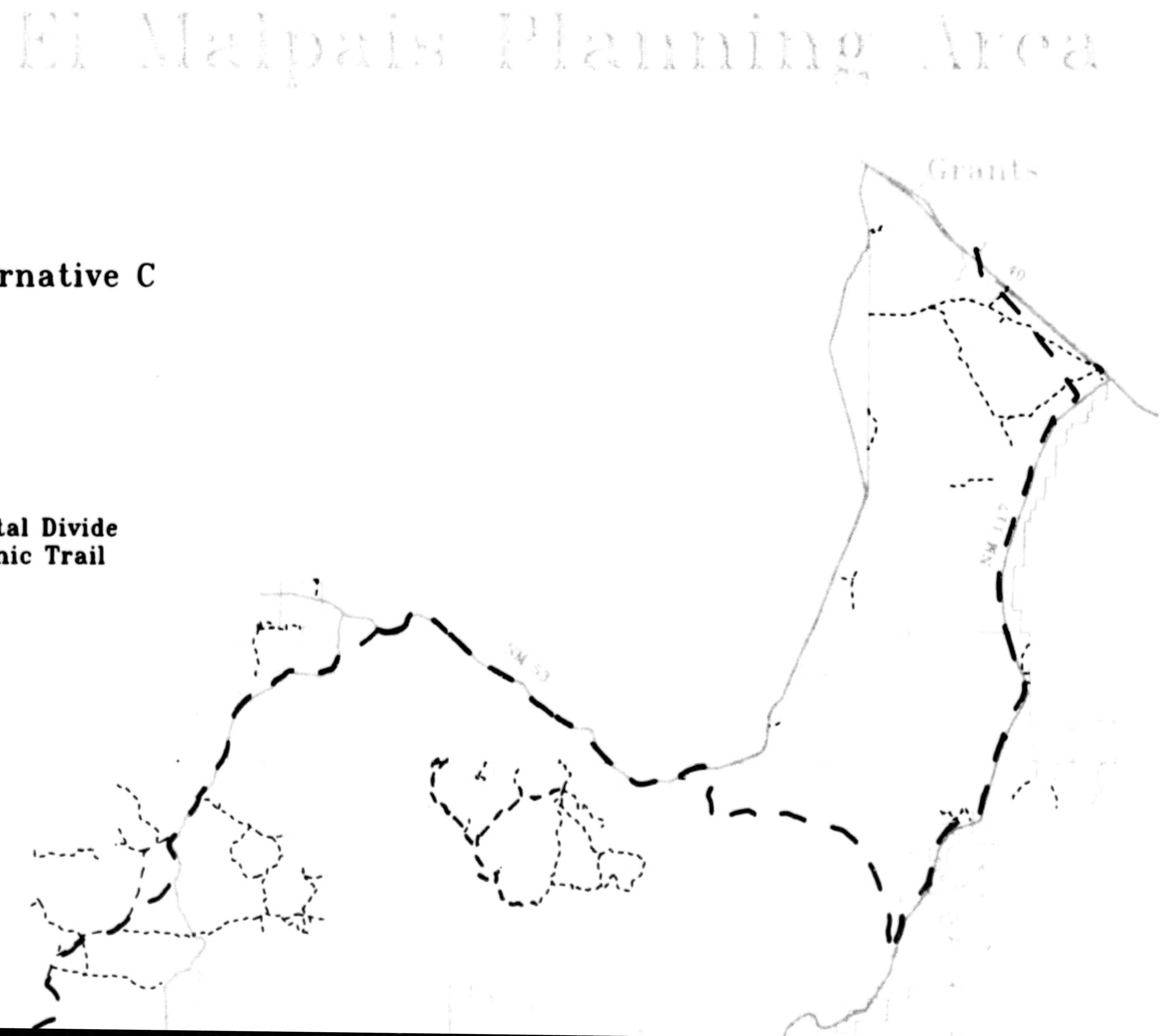
Map 20

Roads – Alternative C

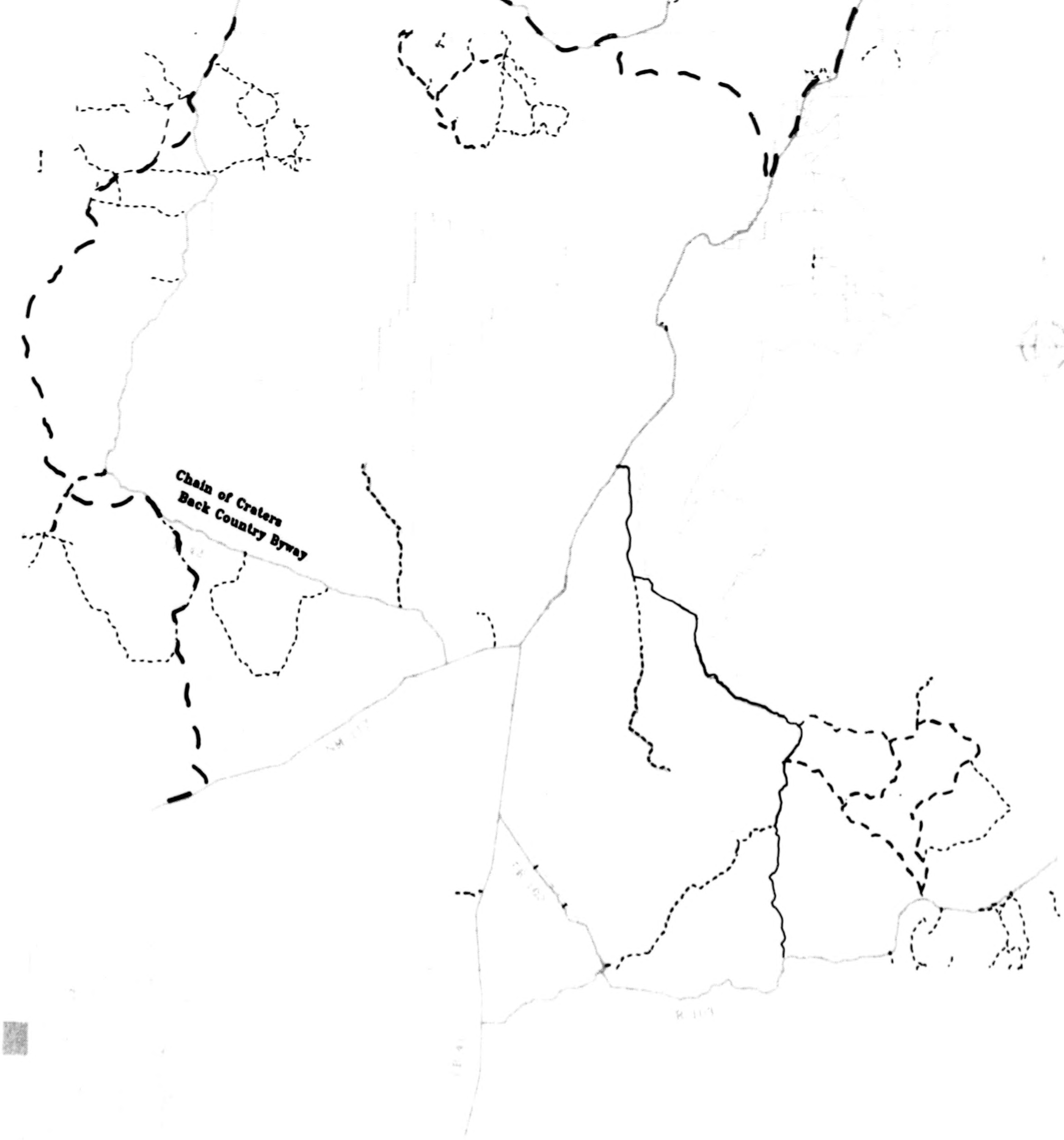


—— **Arterial**

- - - **Collector**

..... **Local**

▬ ▬ **Continental Divide**
Nat'l Scenic Trail



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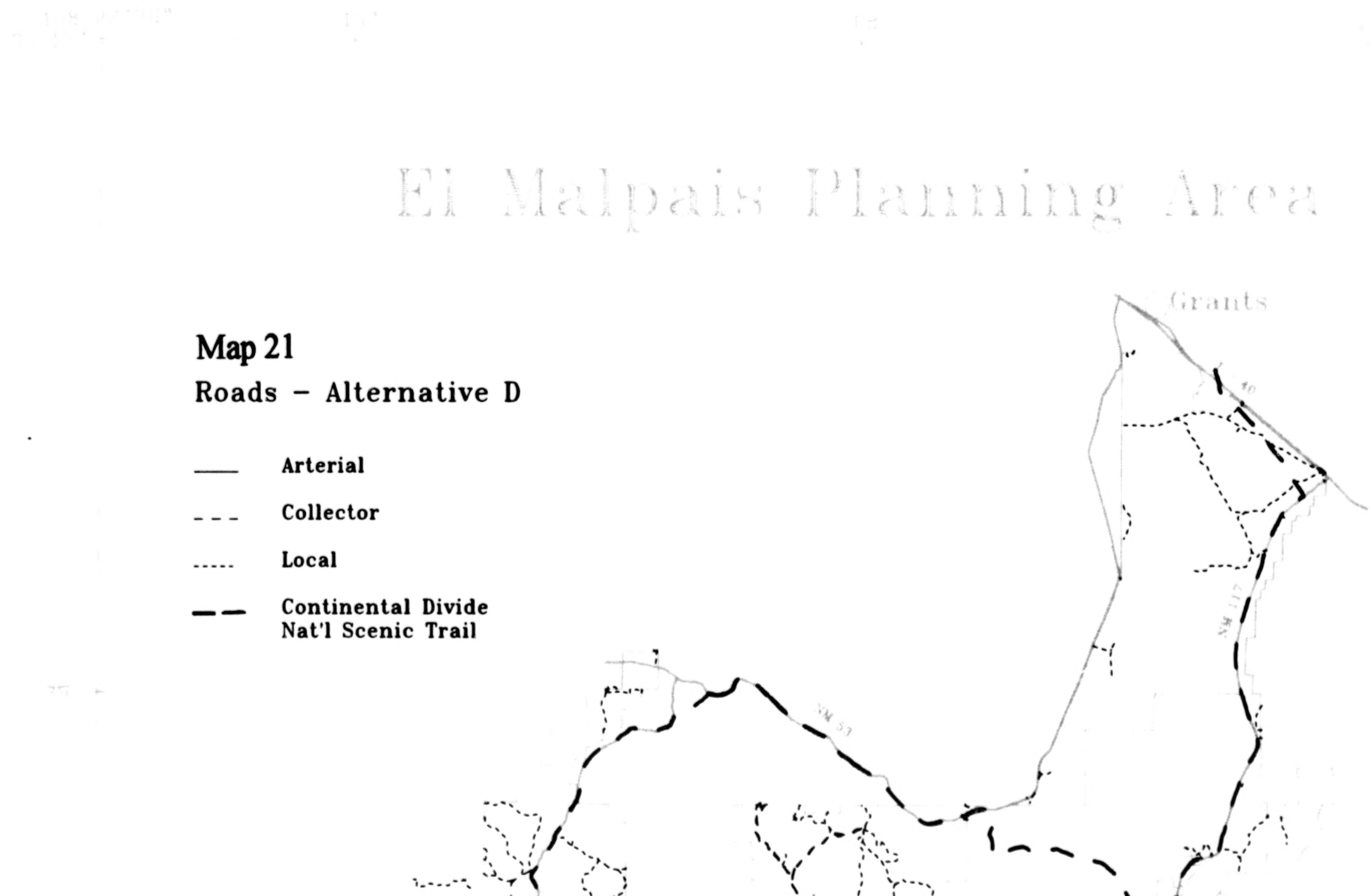
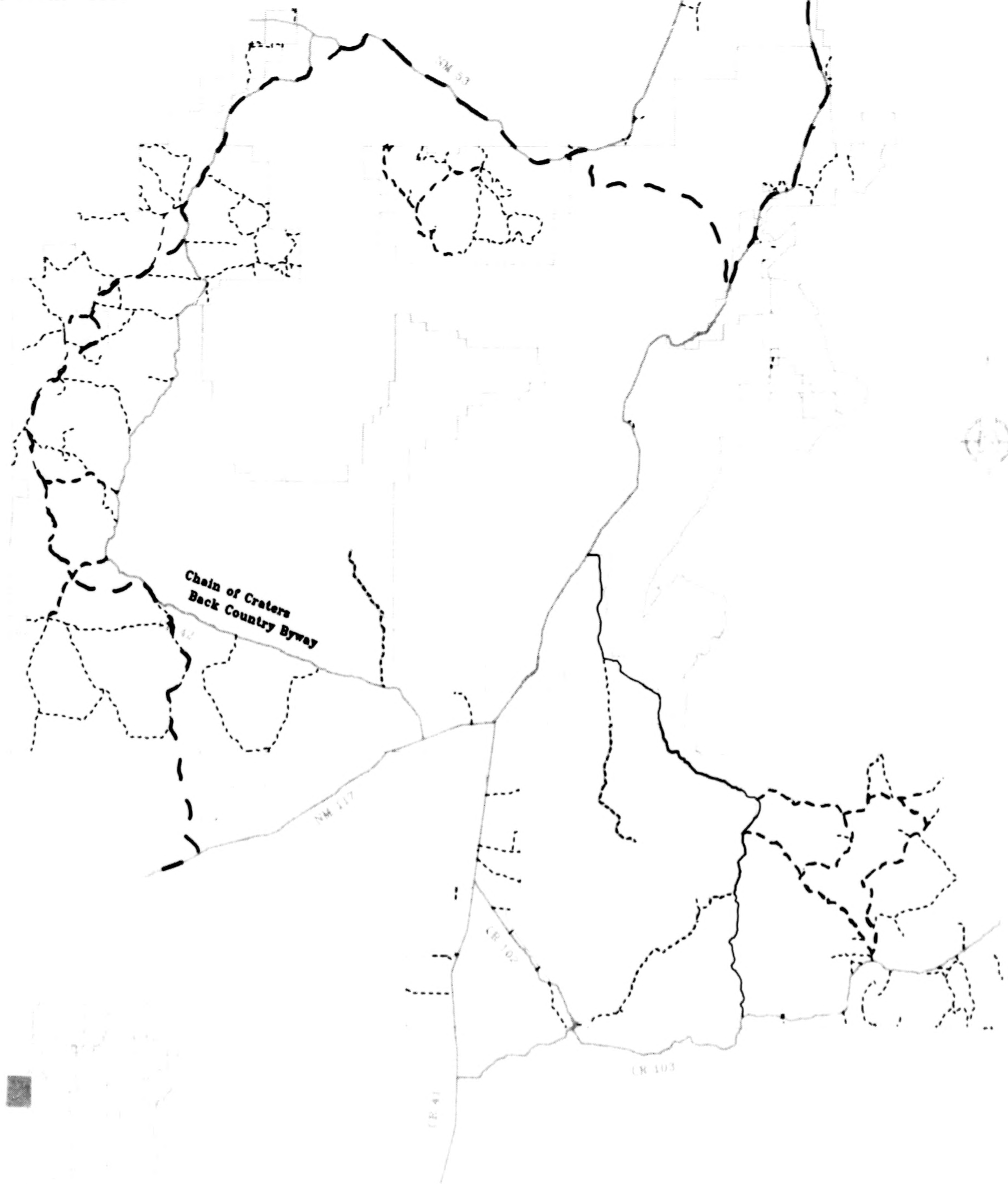
Map 21

Roads – Alternative D





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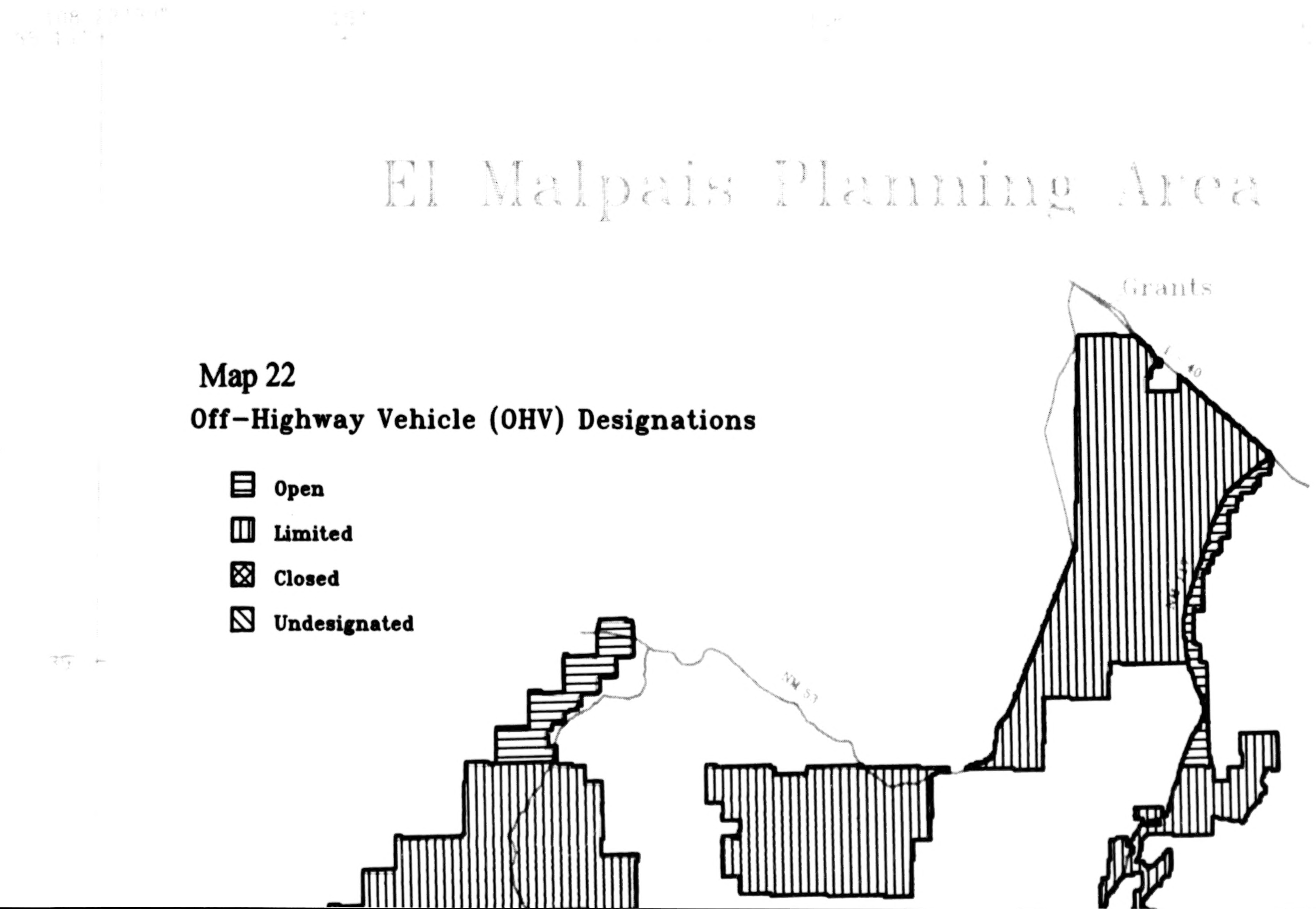
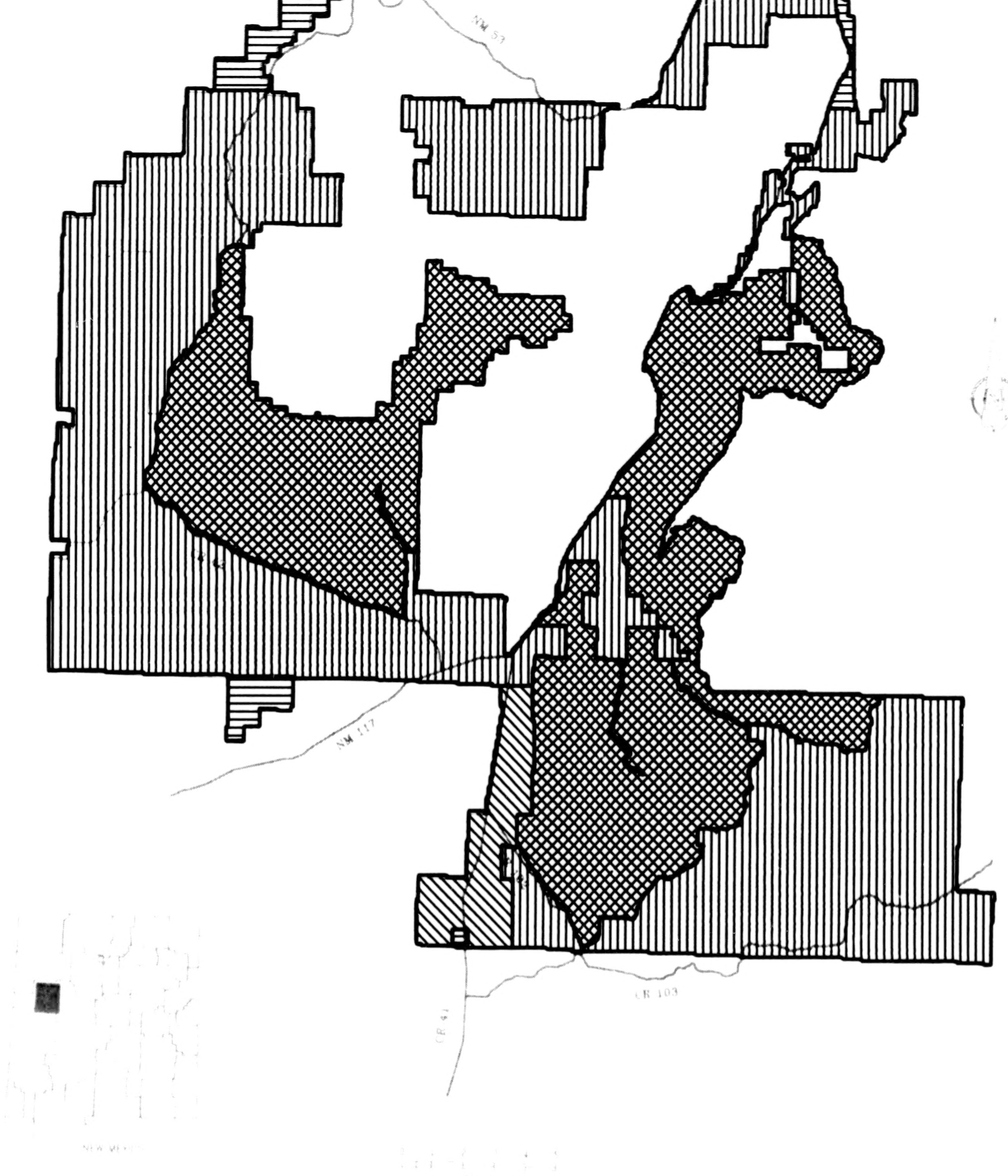


Map 22

Off-Highway Vehicle (OHV) Designations



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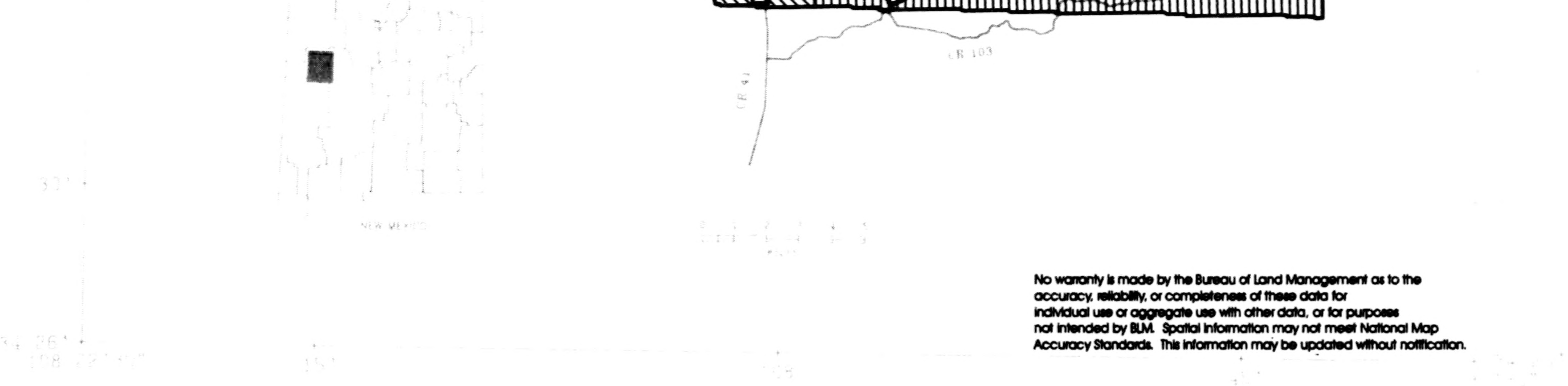

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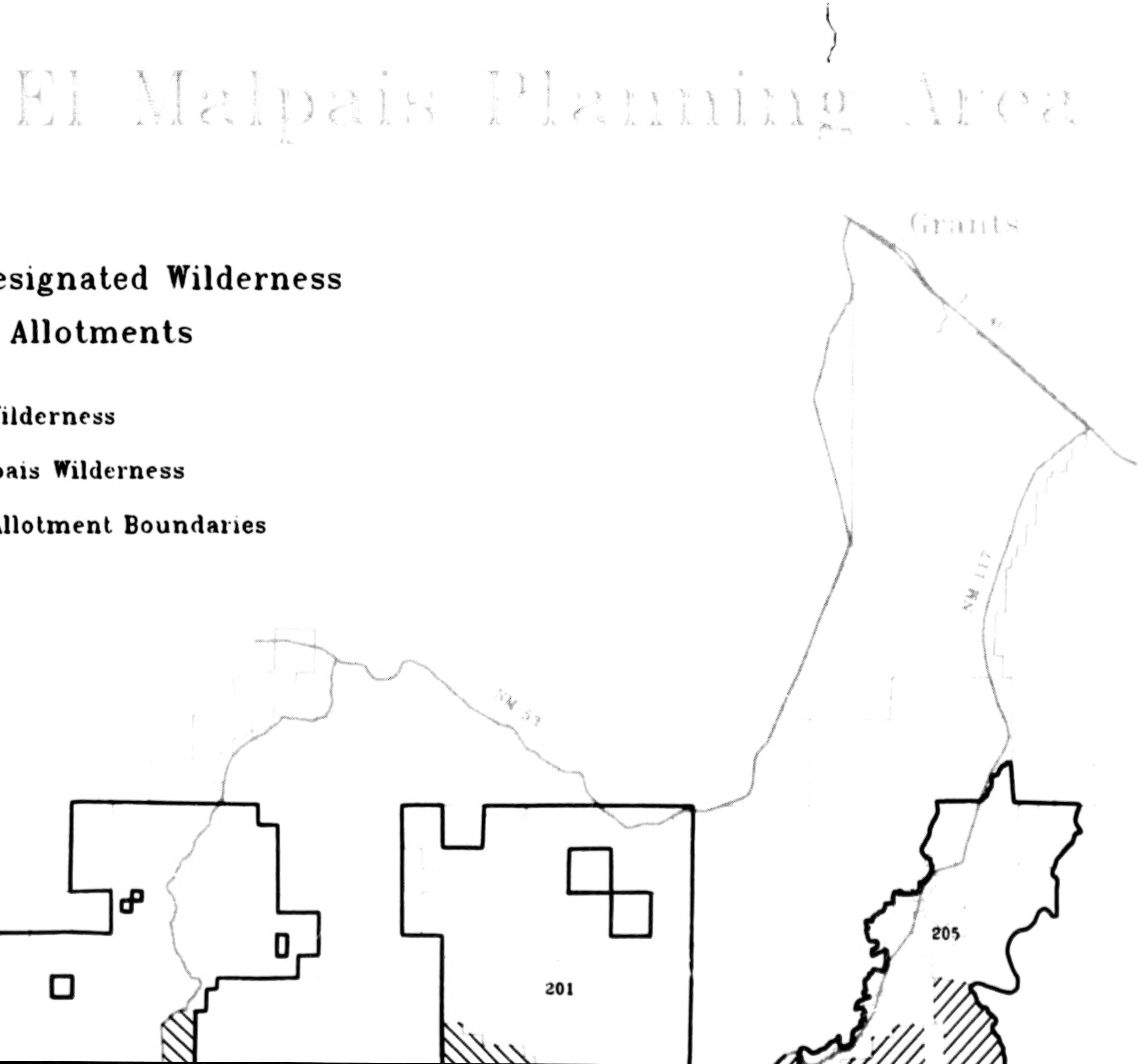
Map 23

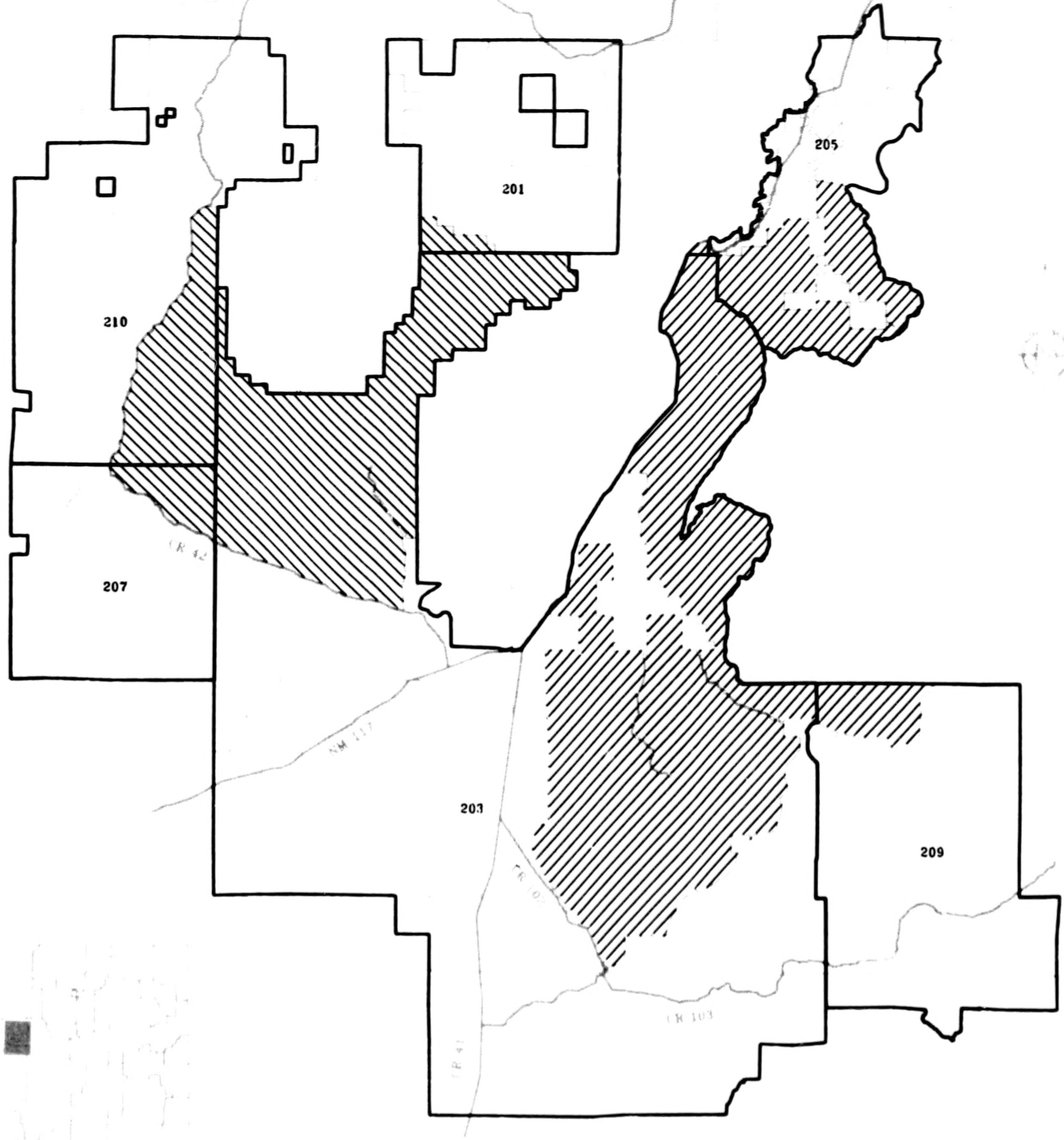
Overlap of Designated Wilderness with Grazing Allotments

▨ Cebolla Wilderness

▧ West Malpais Wilderness

— Grazing Allotment Boundaries





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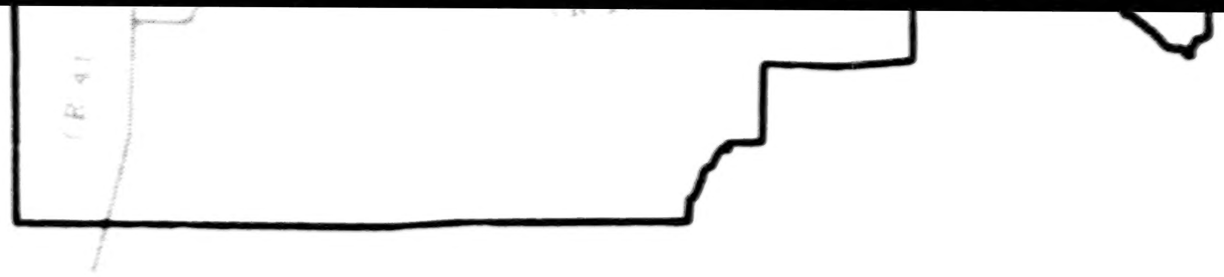

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El Malpais Planning Area

Map 24

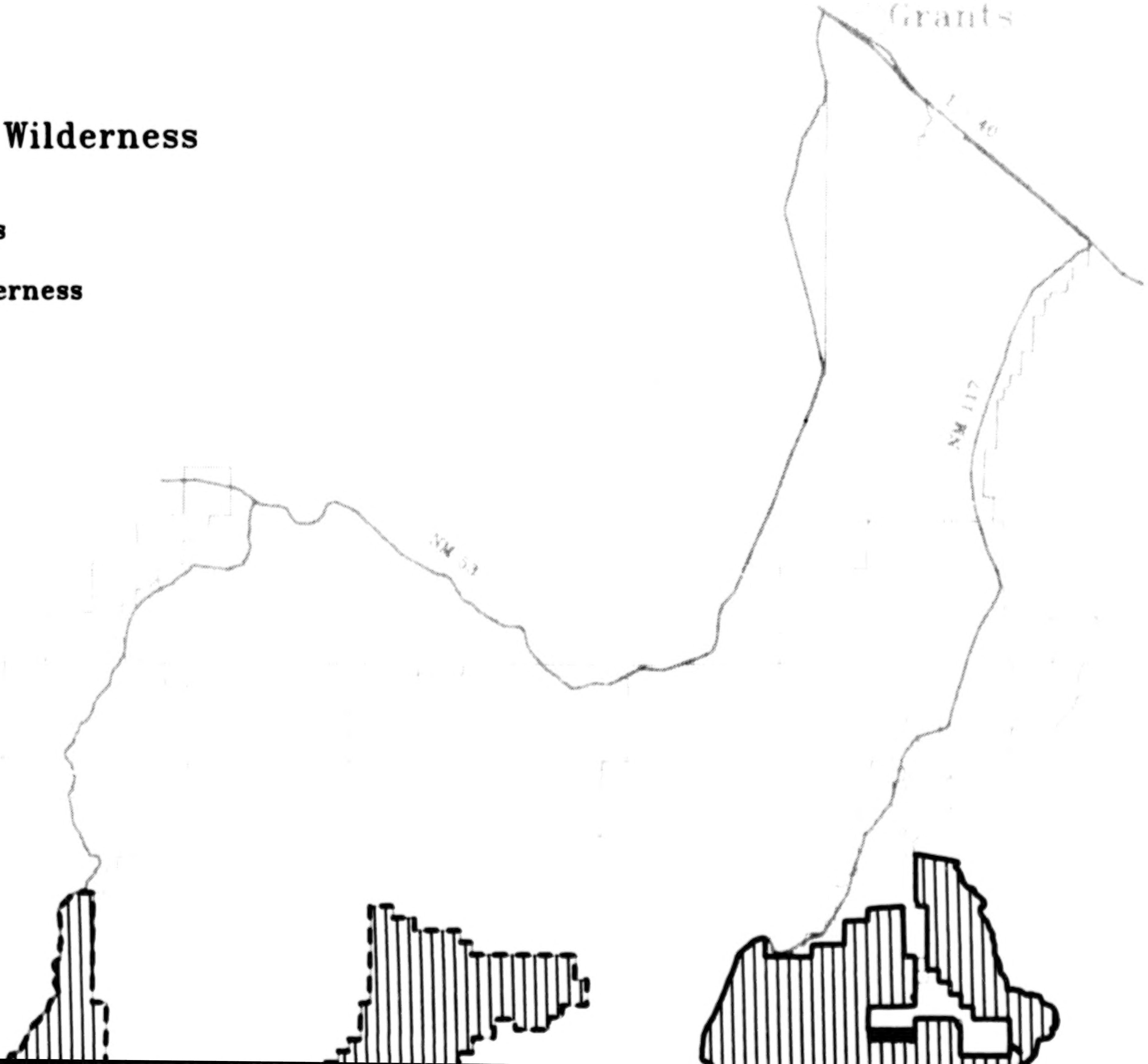
Land Ownership in Wilderness

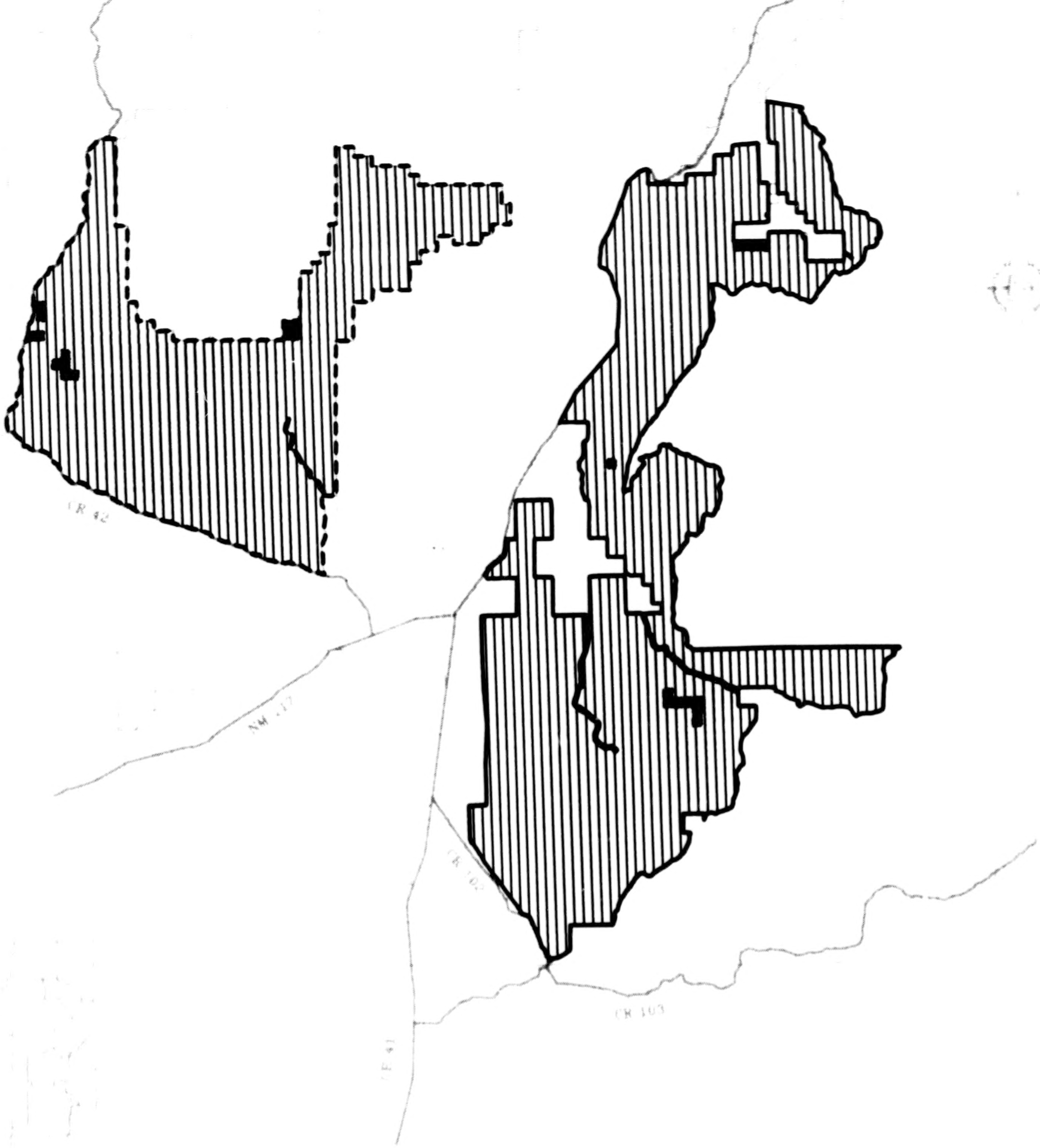
— **Cebolla Wilderness**

- - - **West Malpais Wilderness**

■ **Private**

▥ **BLM**





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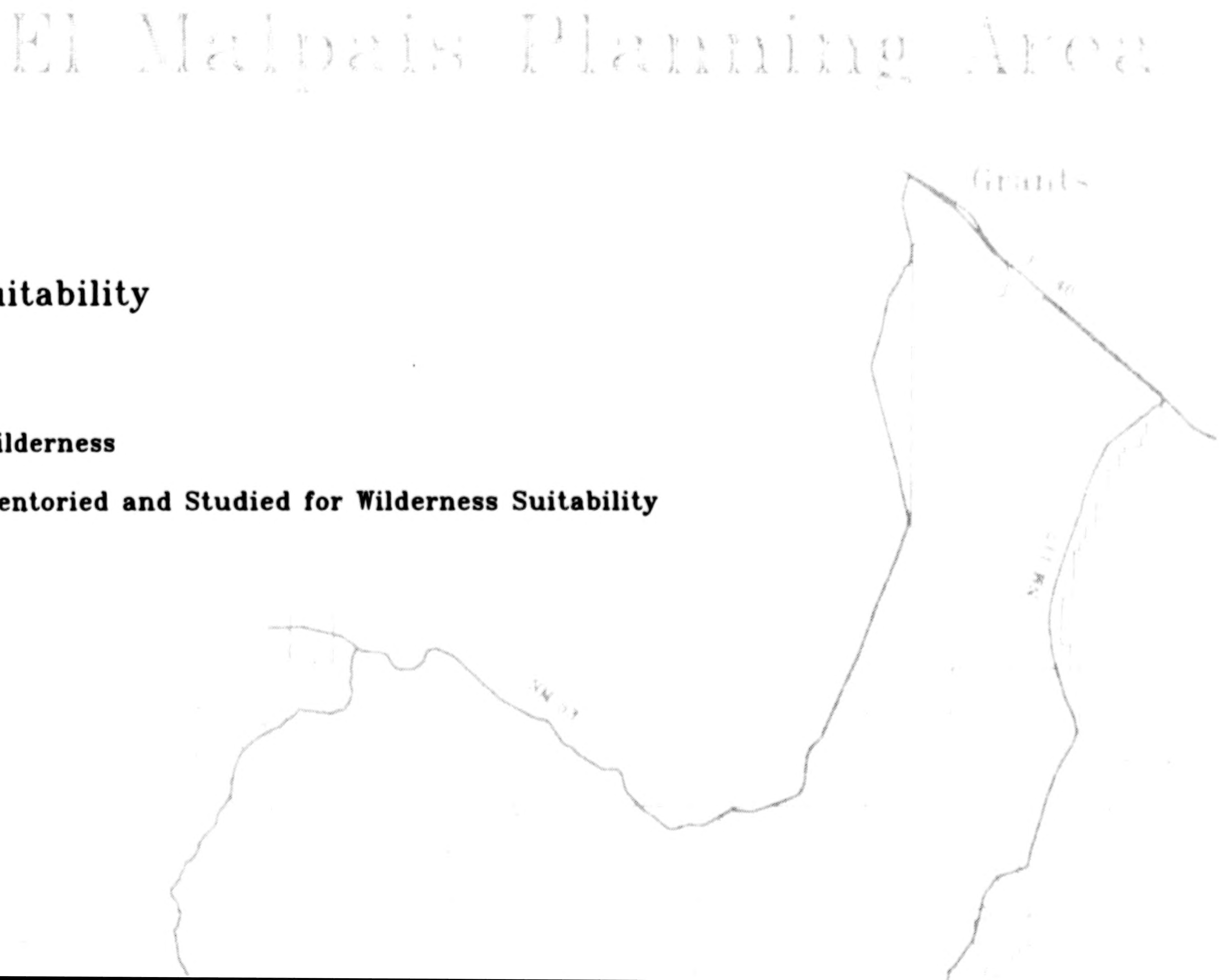


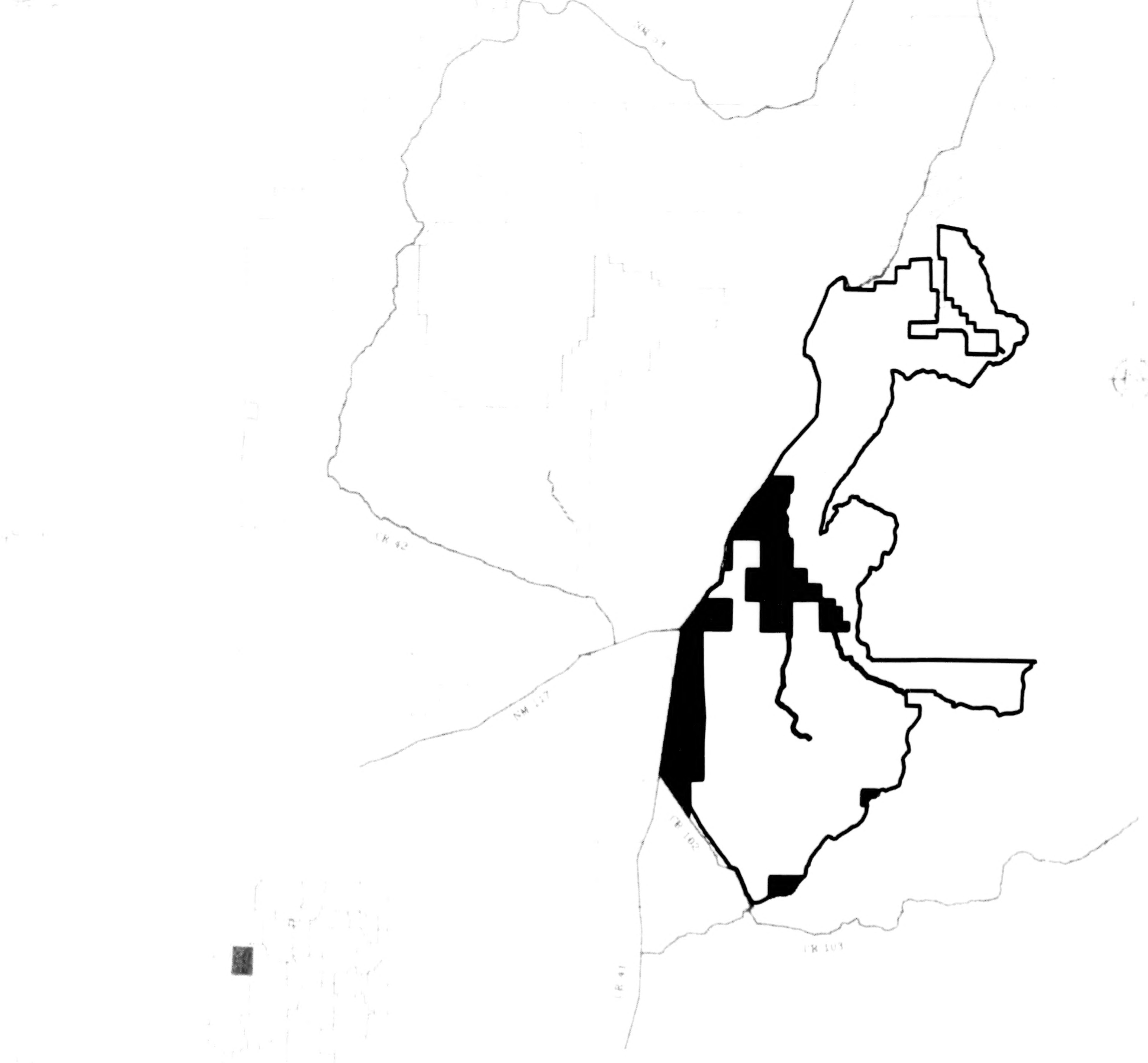
Map 25

Wilderness Suitability

Alternative A

— Cebolla Wilderness

■ Lands Inventoried and Studied for Wilderness Suitability



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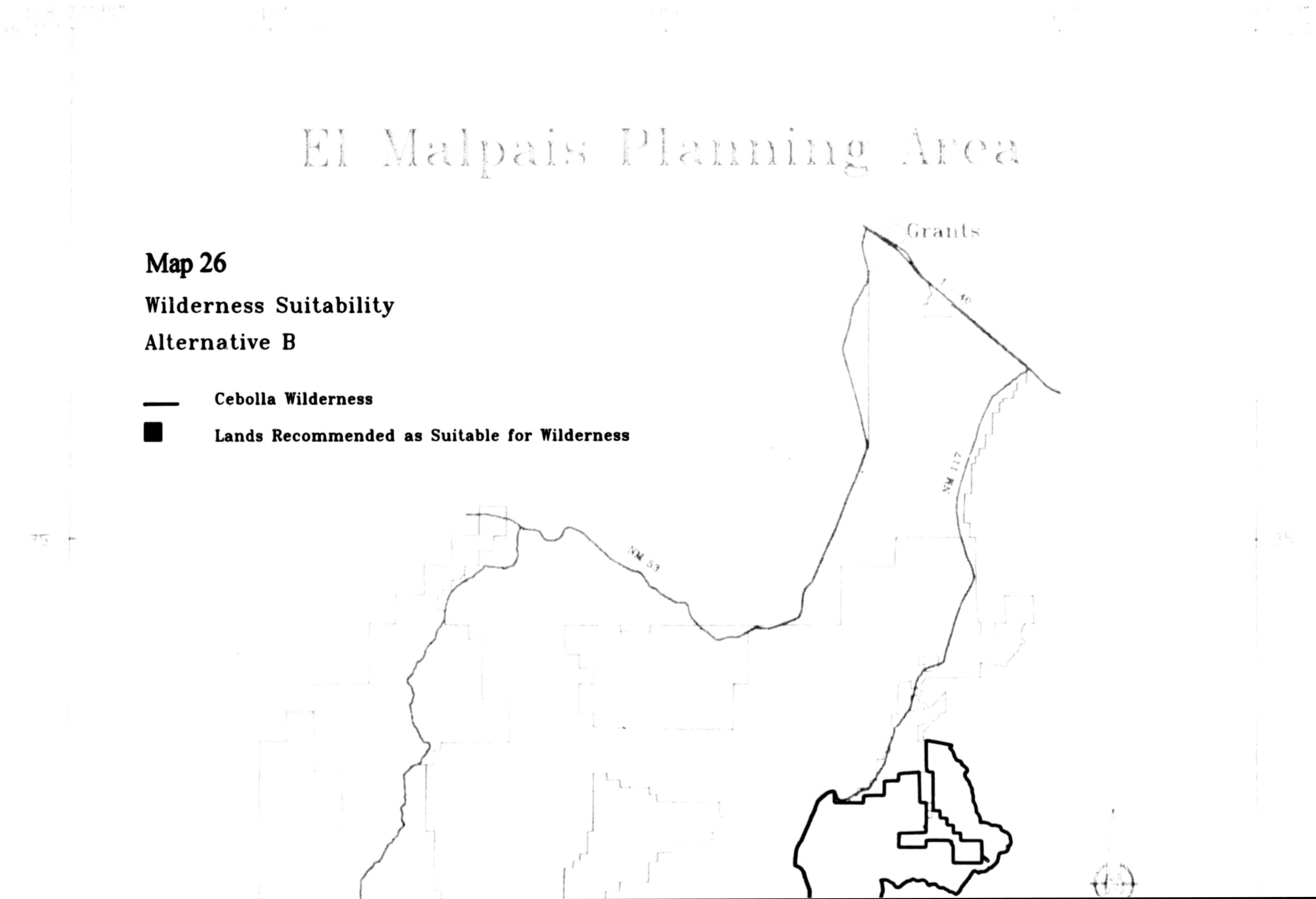


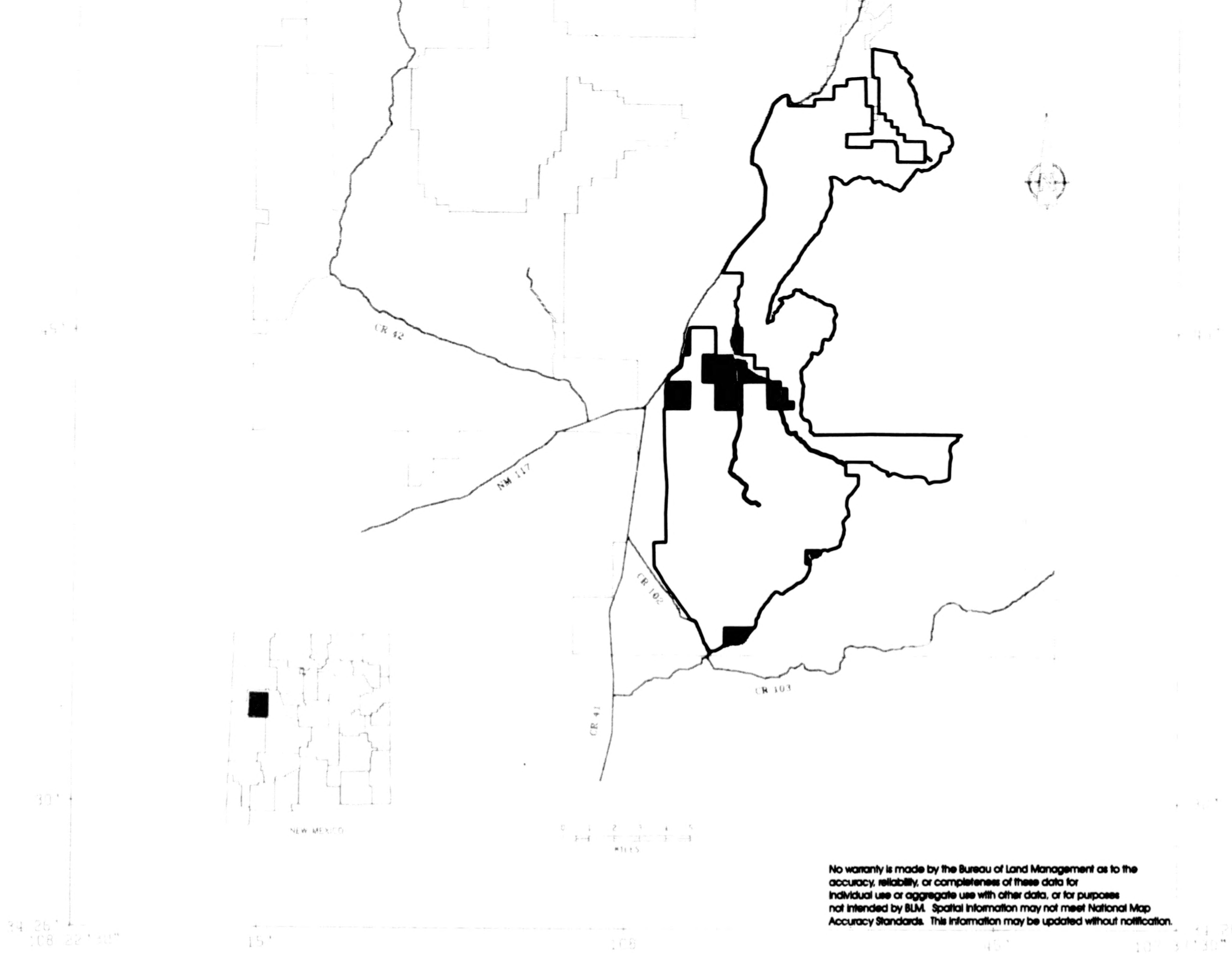
Map 26

Wilderness Suitability

Alternative B

— **Cebolla Wilderness**

■ **Lands Recommended as Suitable for Wilderness**



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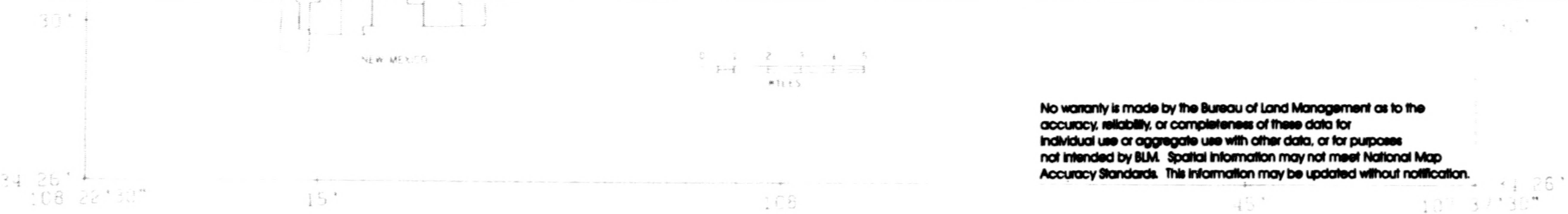

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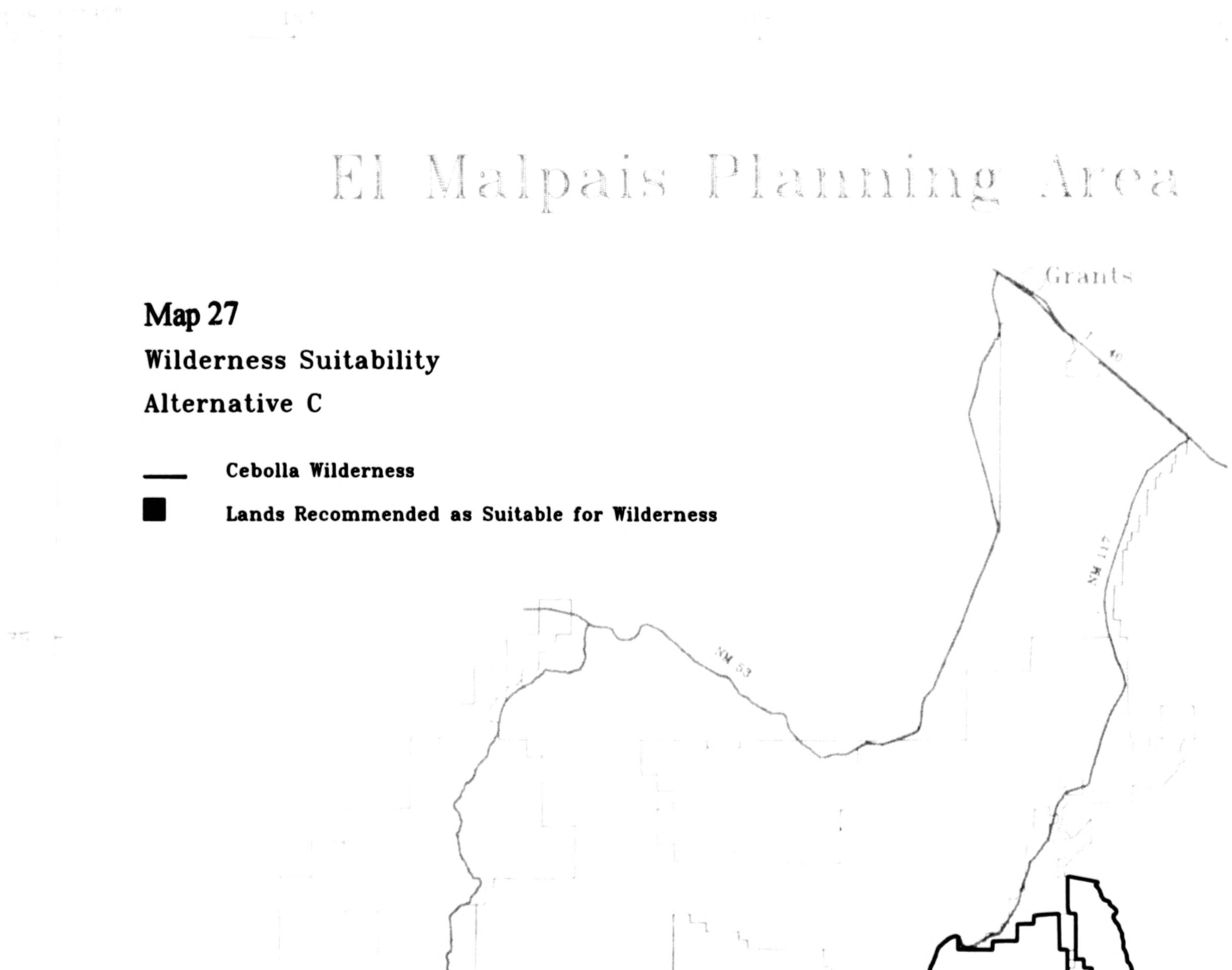


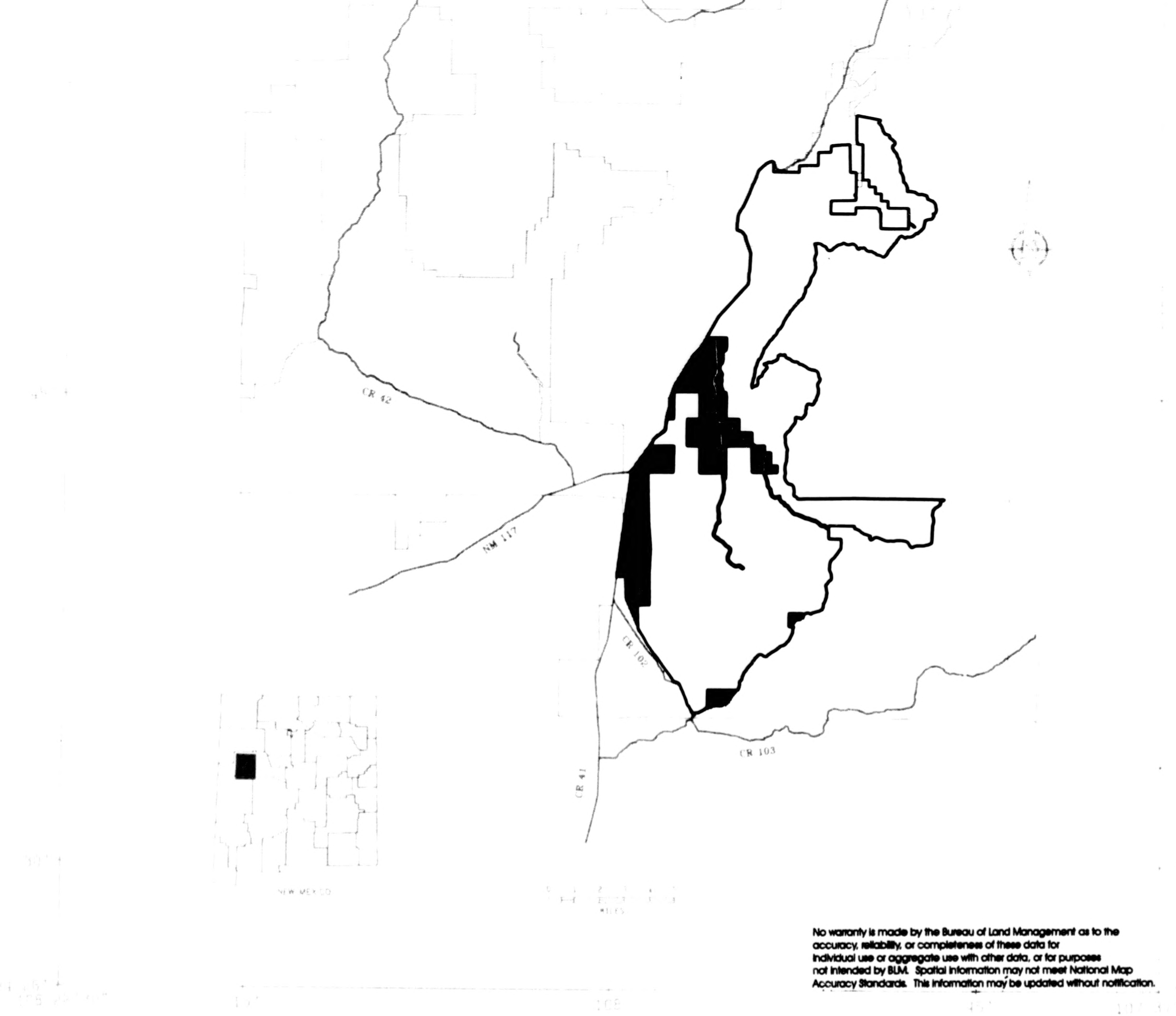
Map 27

Wilderness Suitability

Alternative C

— **Cebolla Wilderness**

■ **Lands Recommended as Suitable for Wilderness**



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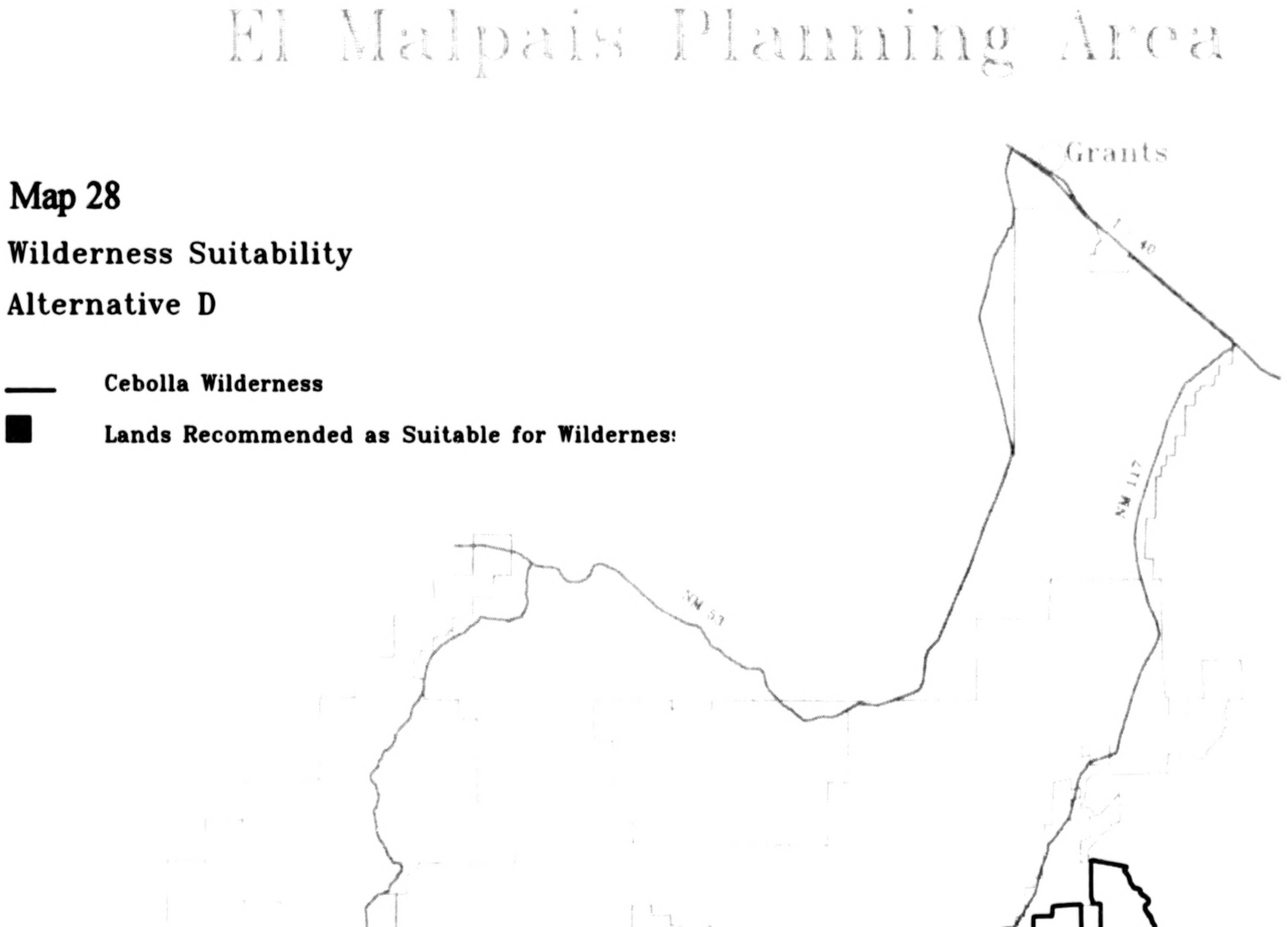
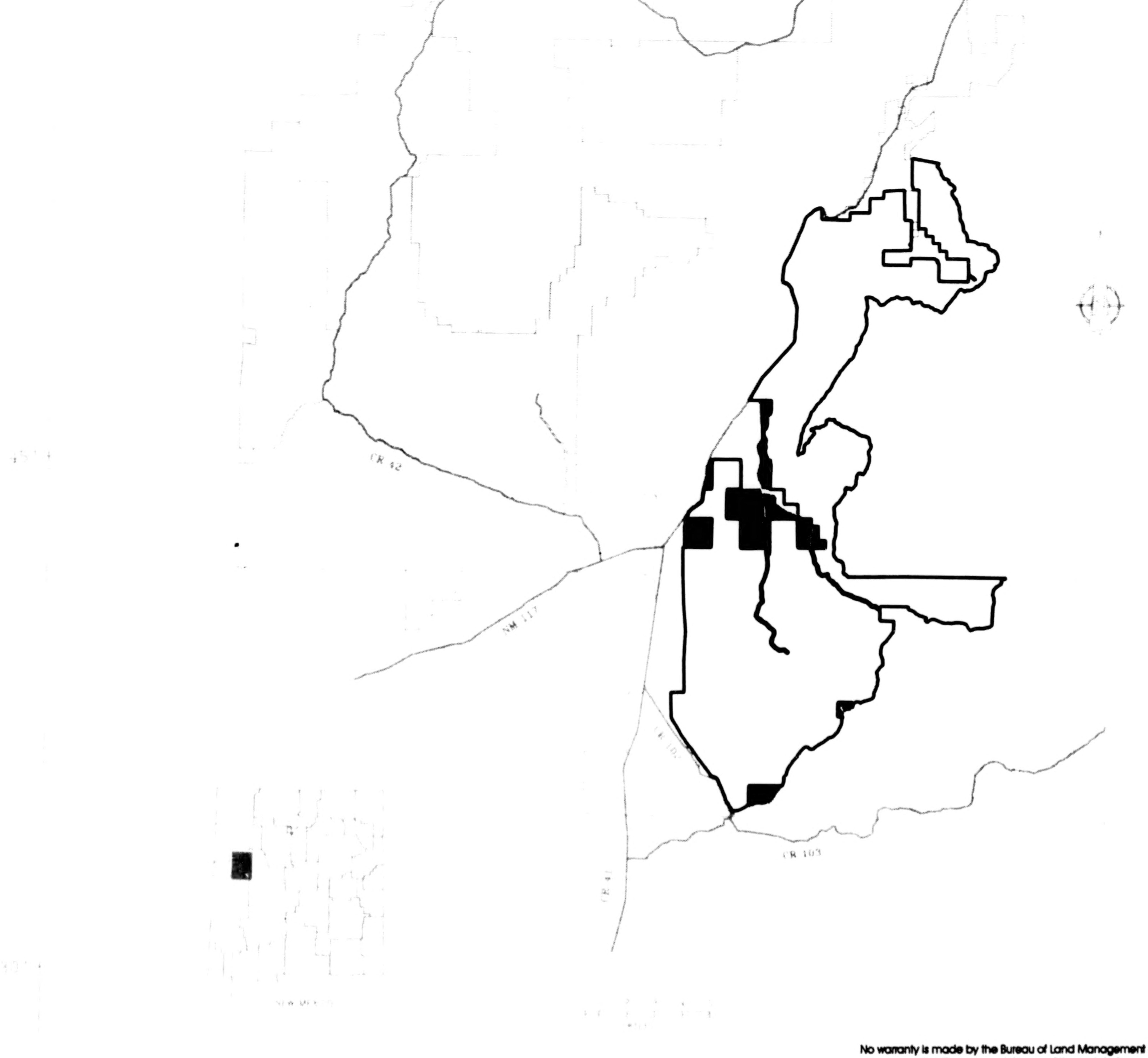


Map 28

Wilderness Suitability

Alternative D



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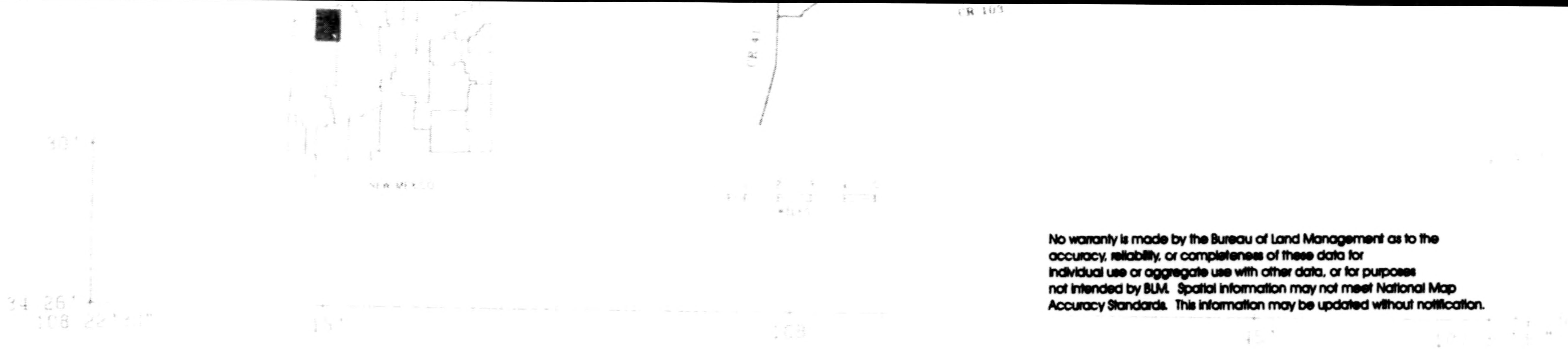

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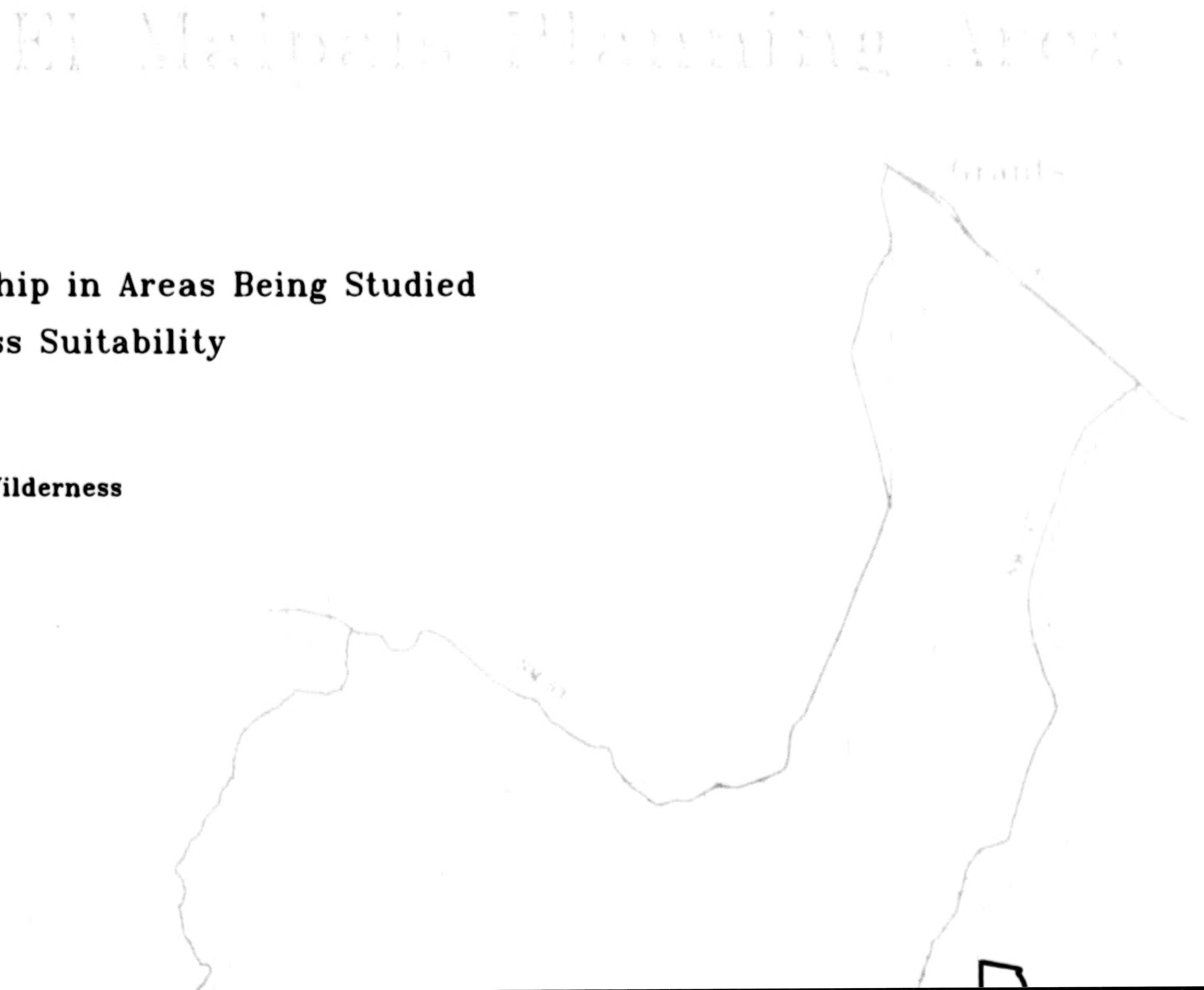
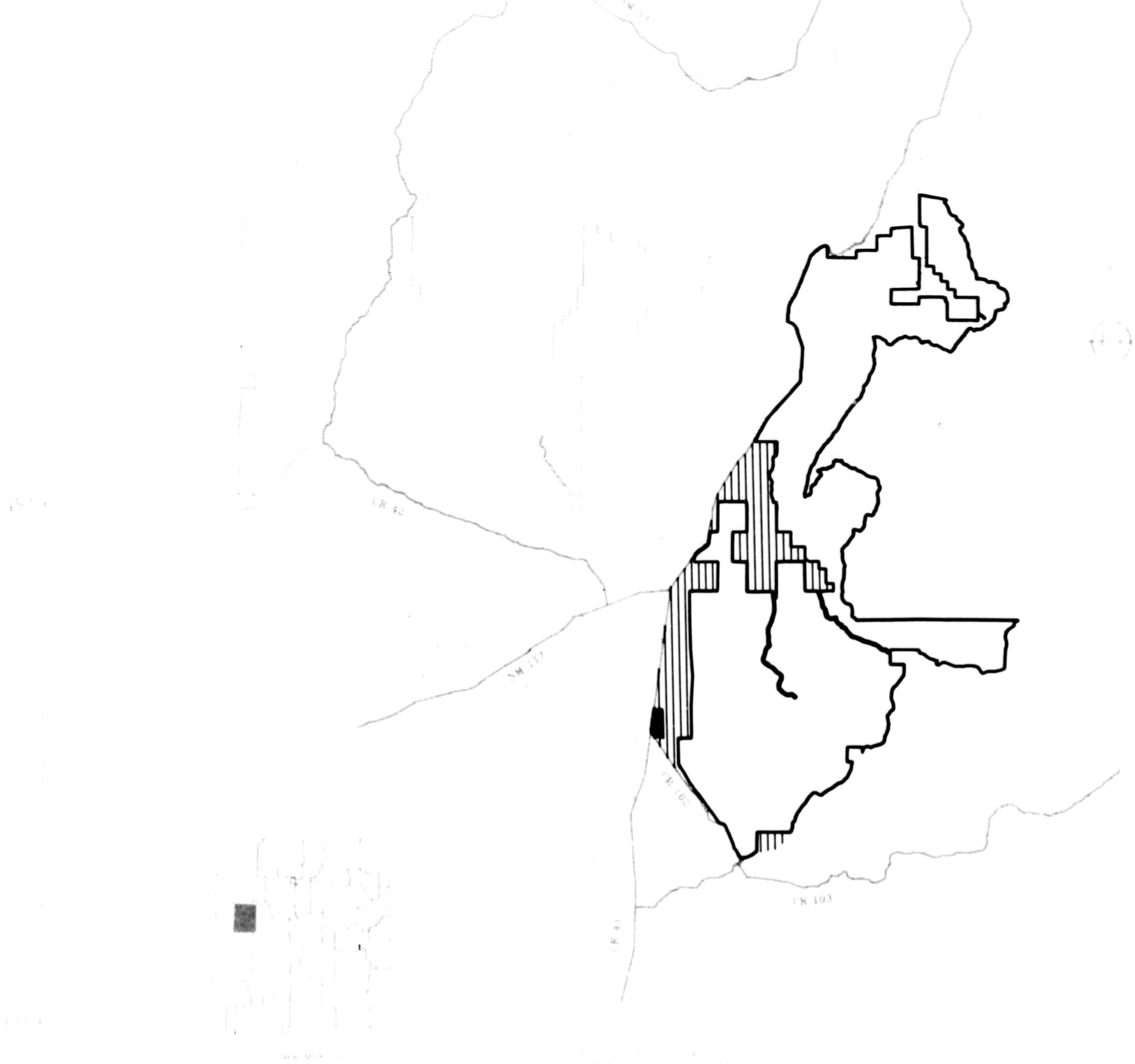


Map 29

Land Ownership in Areas Being Studied for Wilderness Suitability

Alternative A



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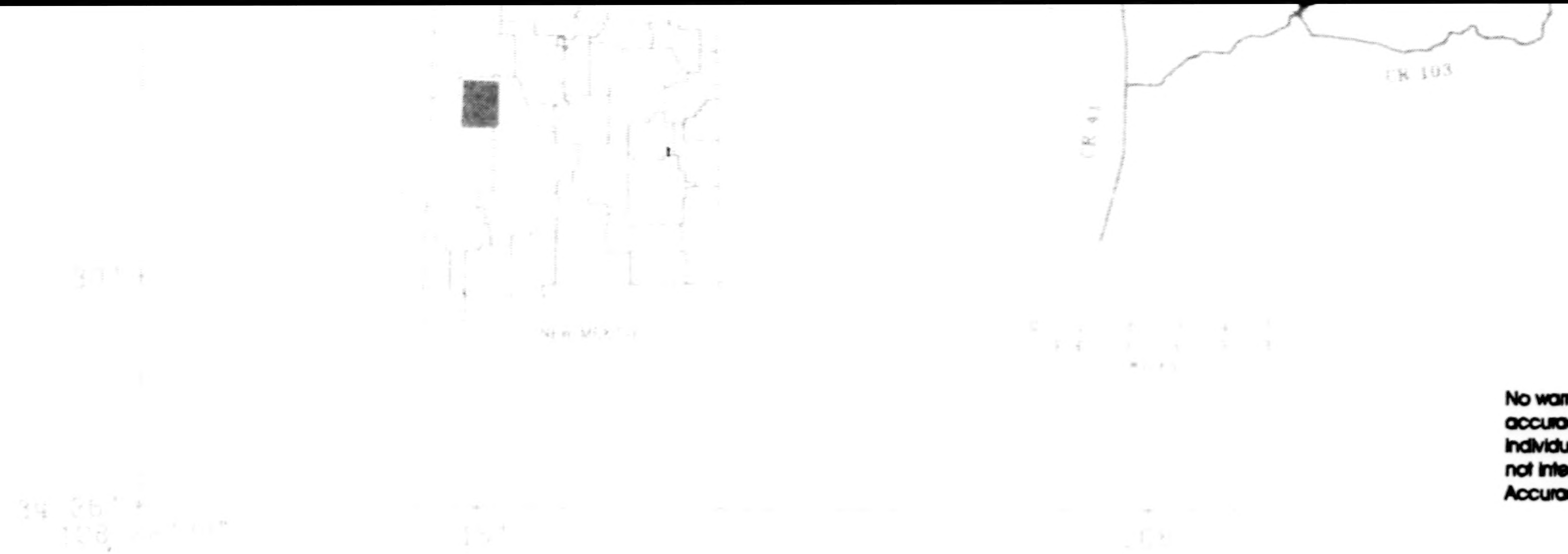

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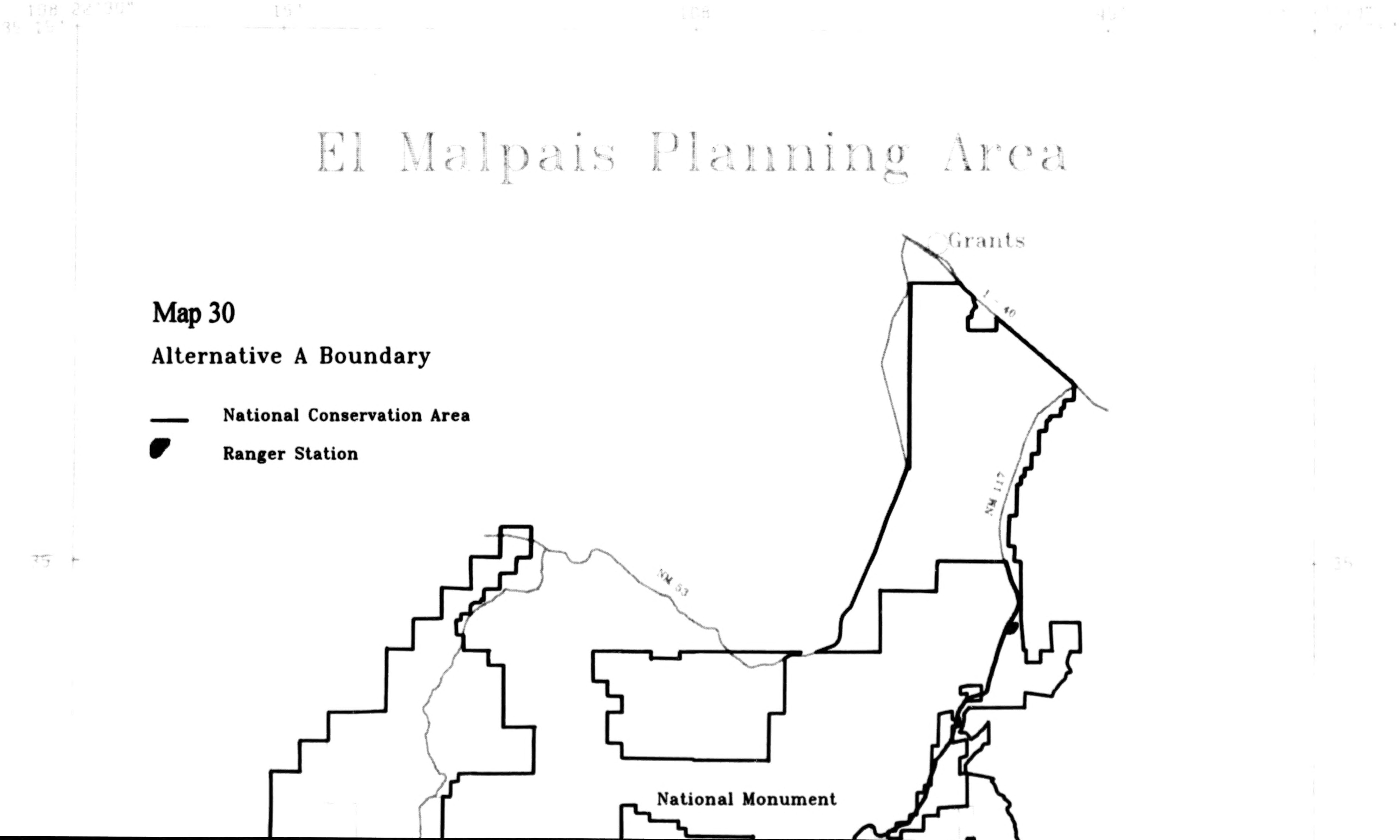
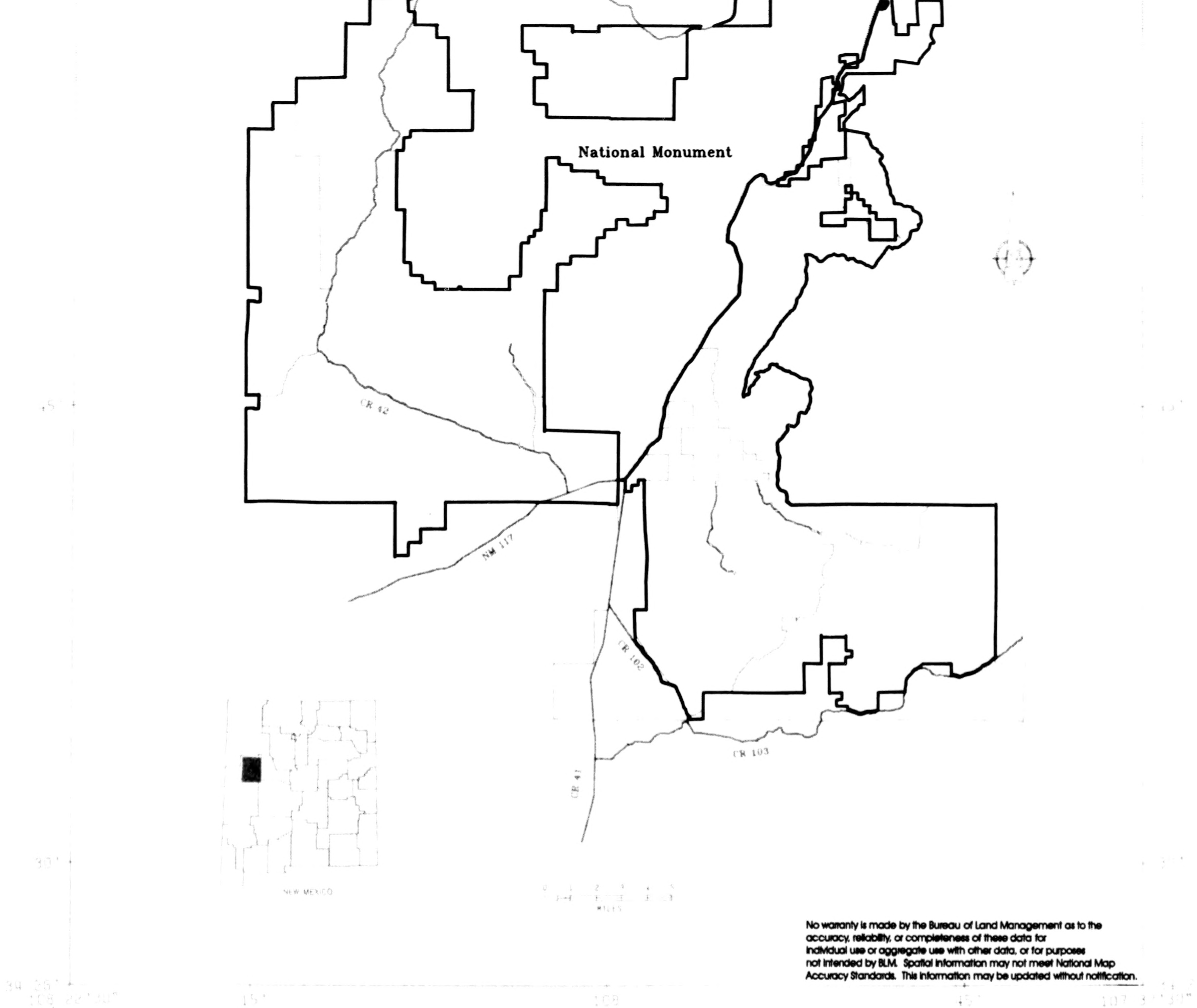


Map 30

Alternative A Boundary



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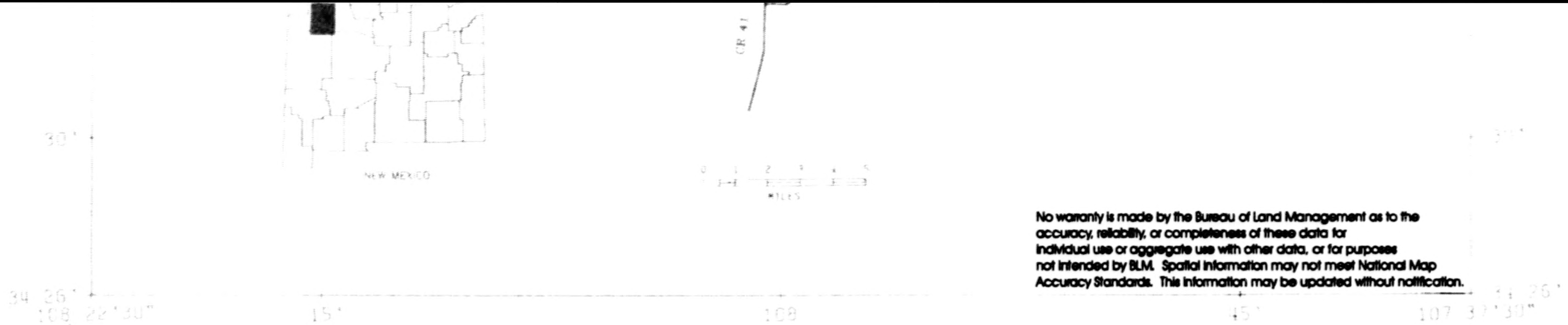

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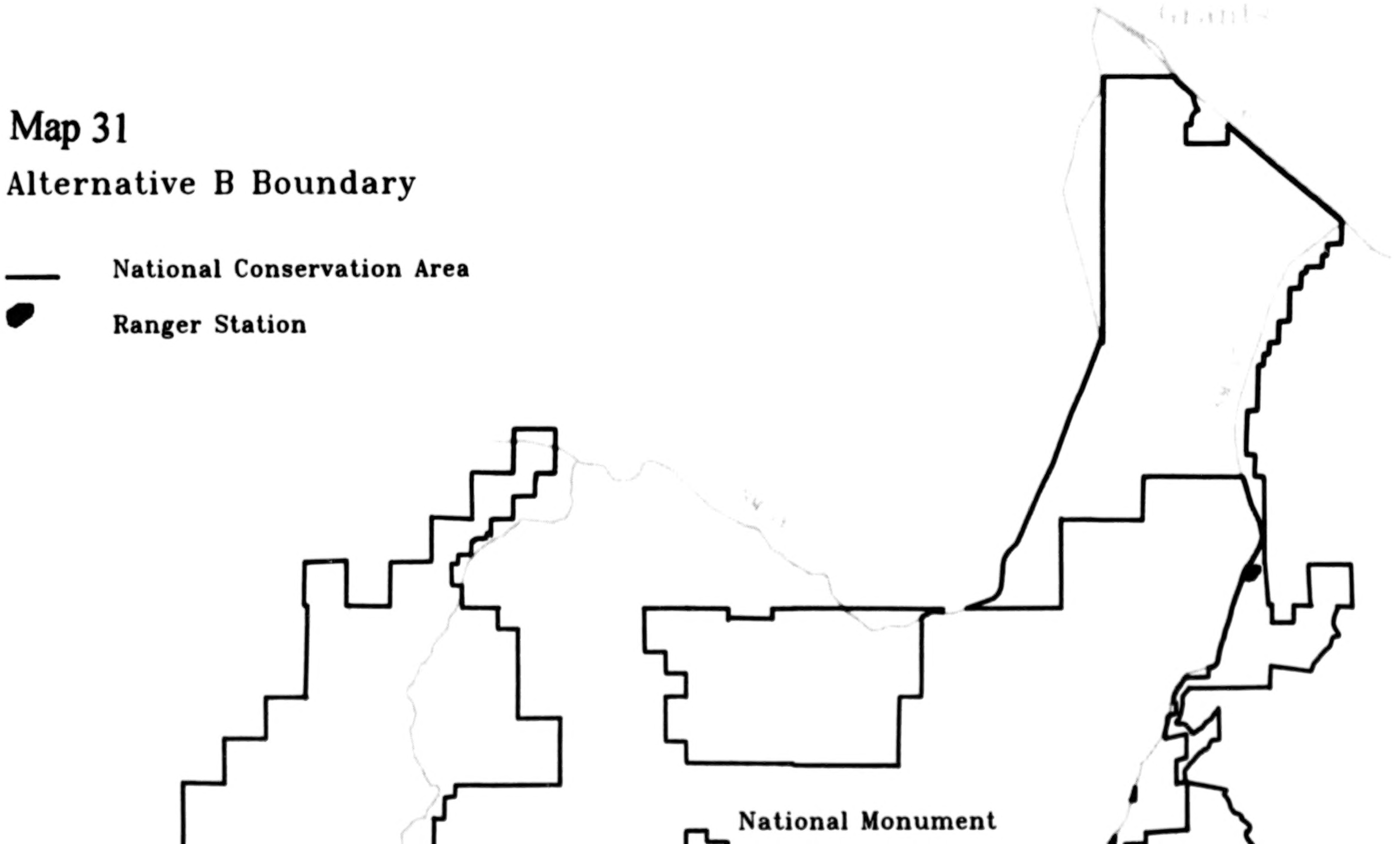
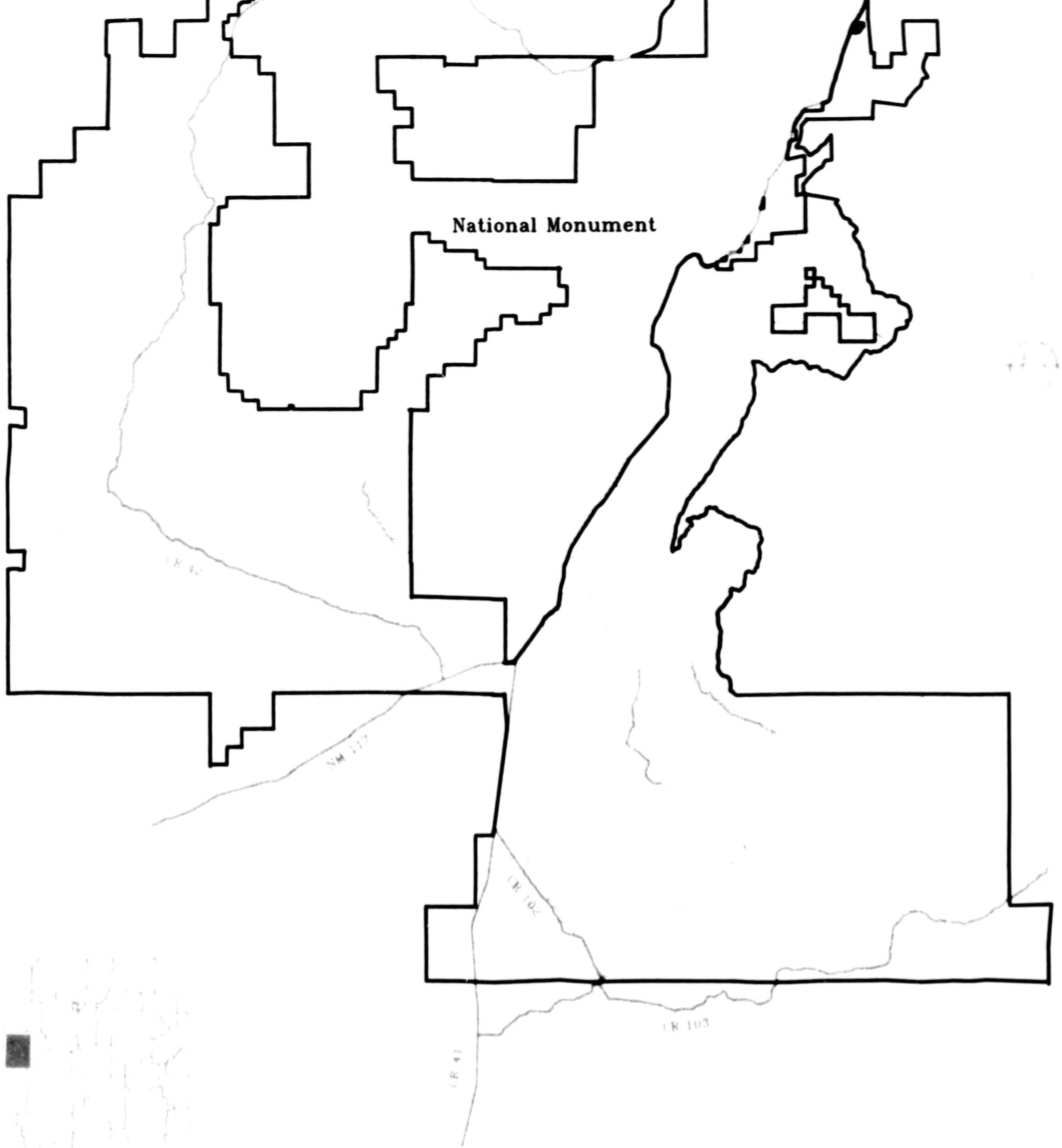
El Malpais Planning Area

Map 31

Alternative B Boundary





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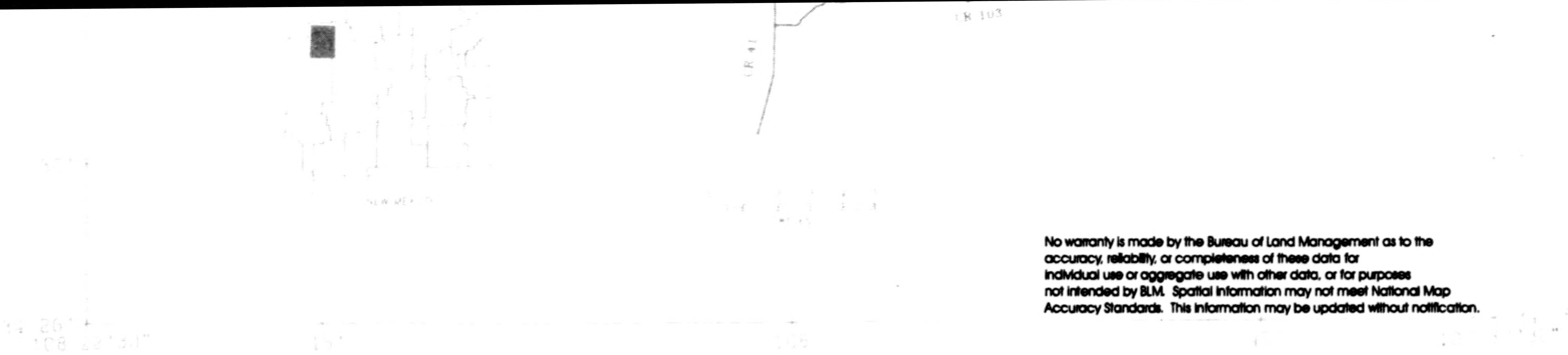

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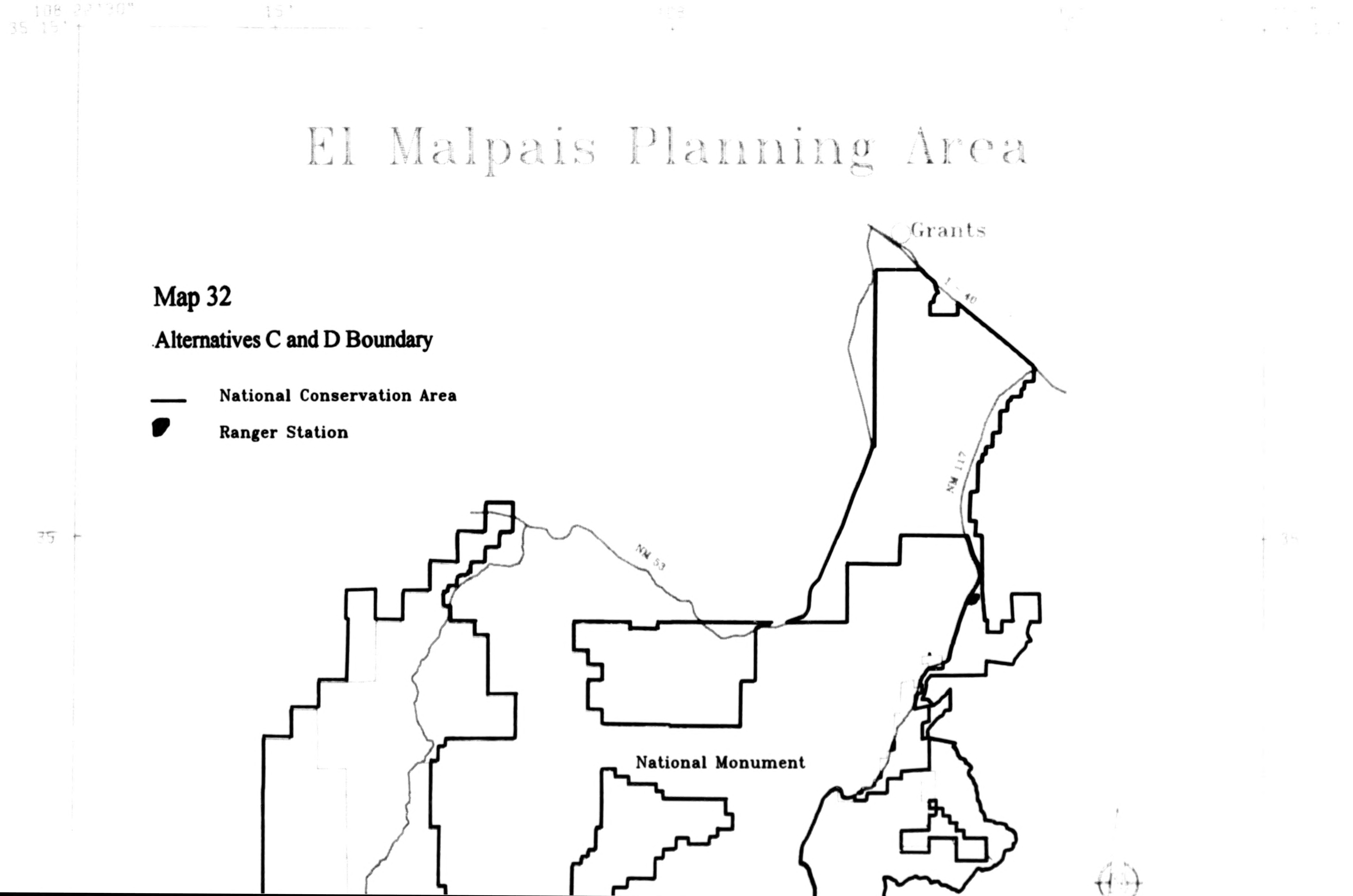
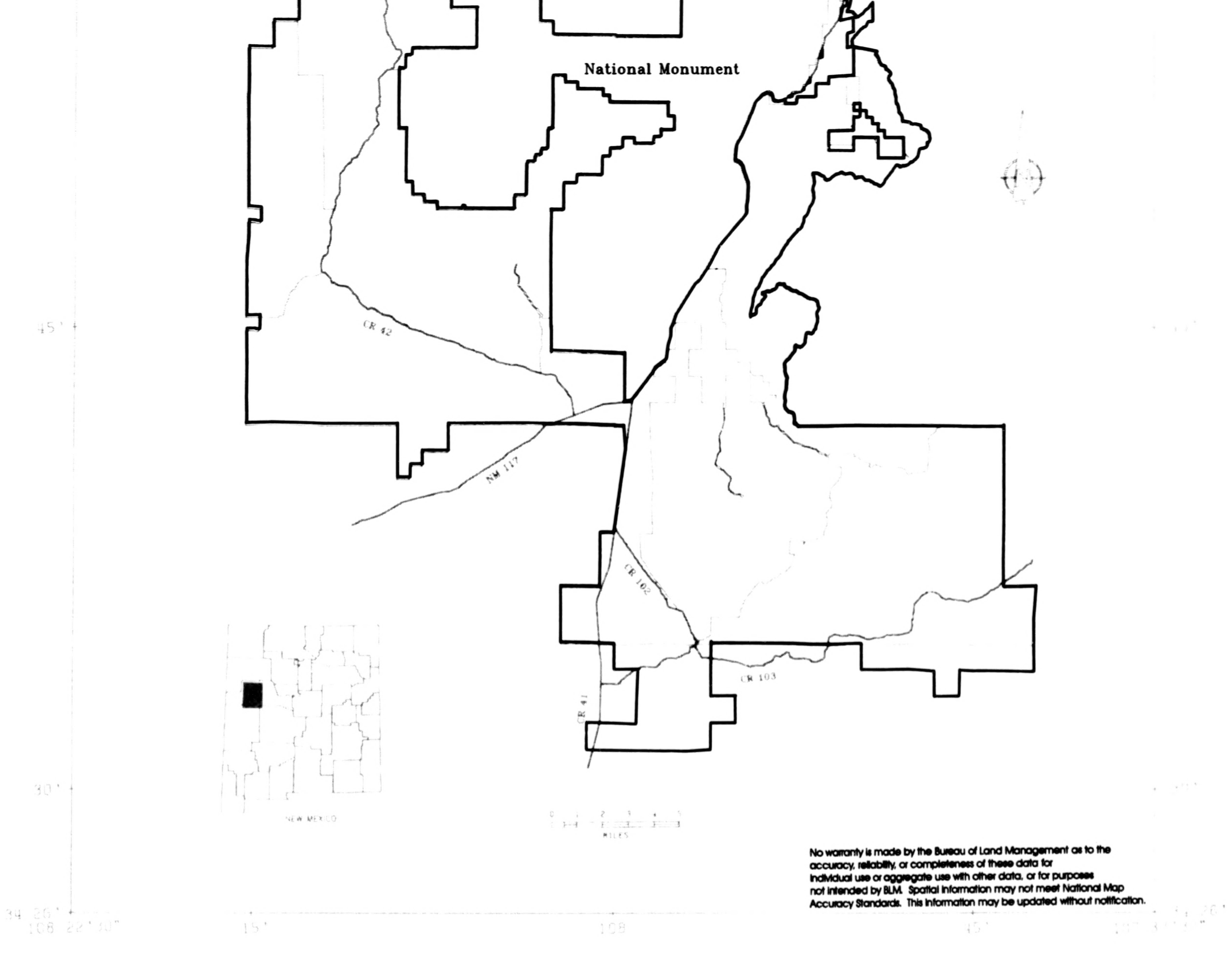
108 22'30"
15'
35 15'



El Malpais Planning Area

Map 32

Alternatives C and D Boundary



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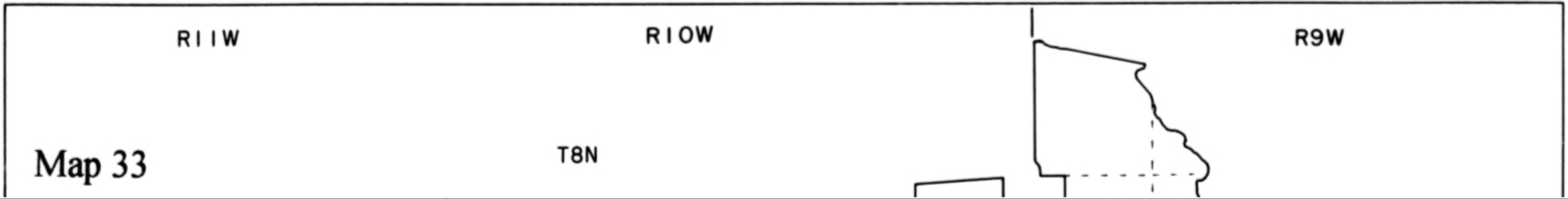
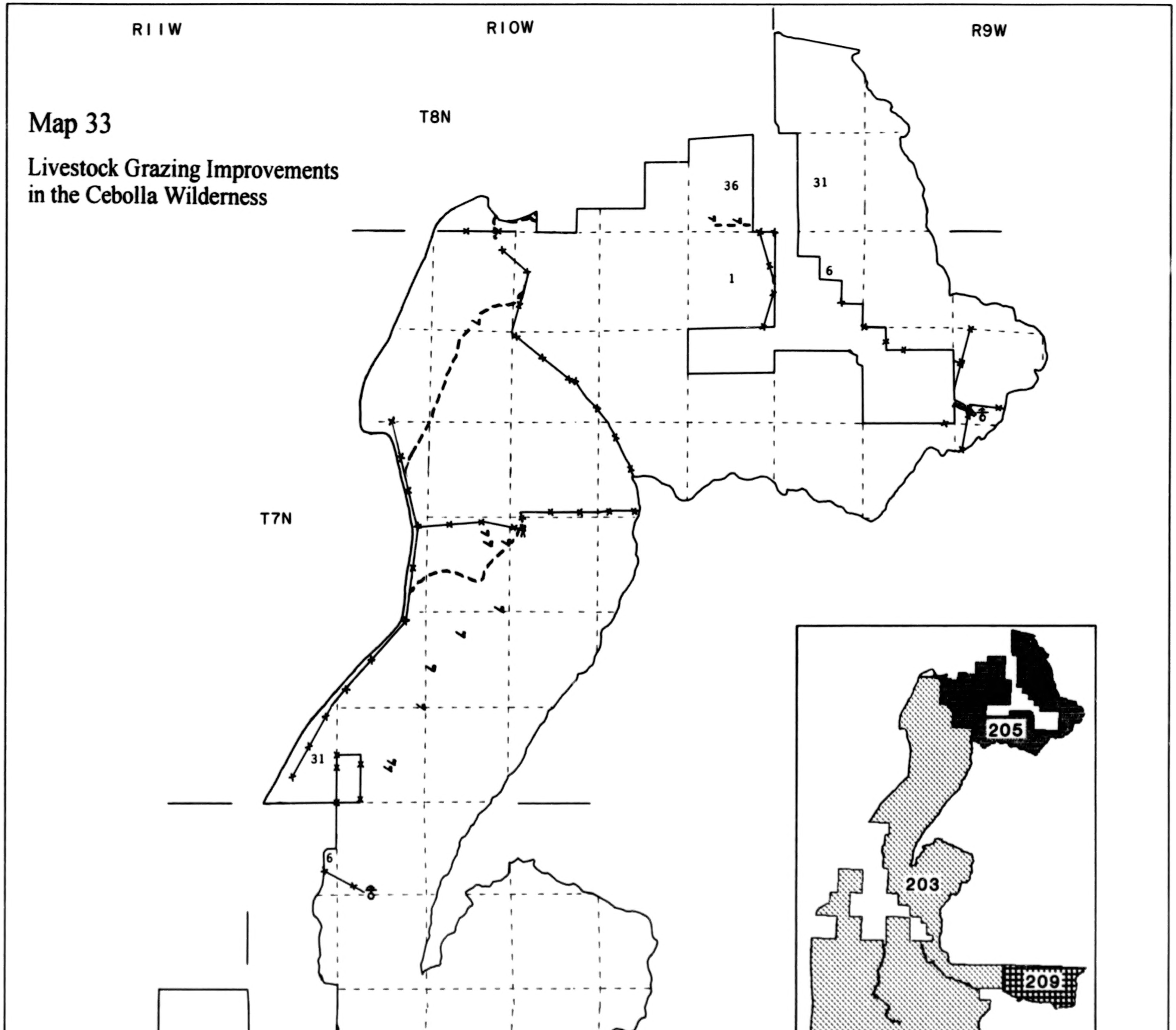
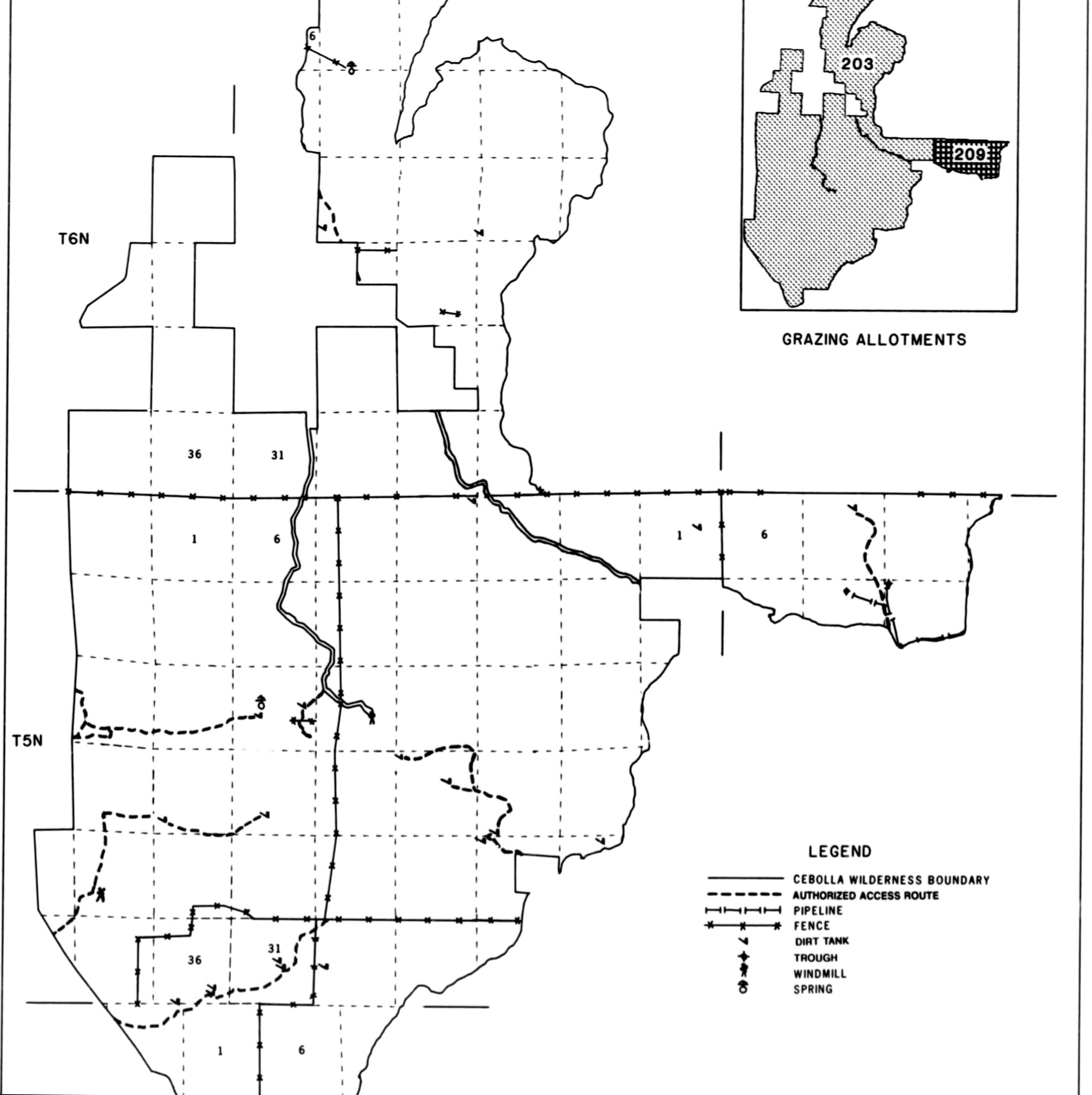
Map 33





Map 33

Livestock Grazing Improvements in the Cebolla Wilderness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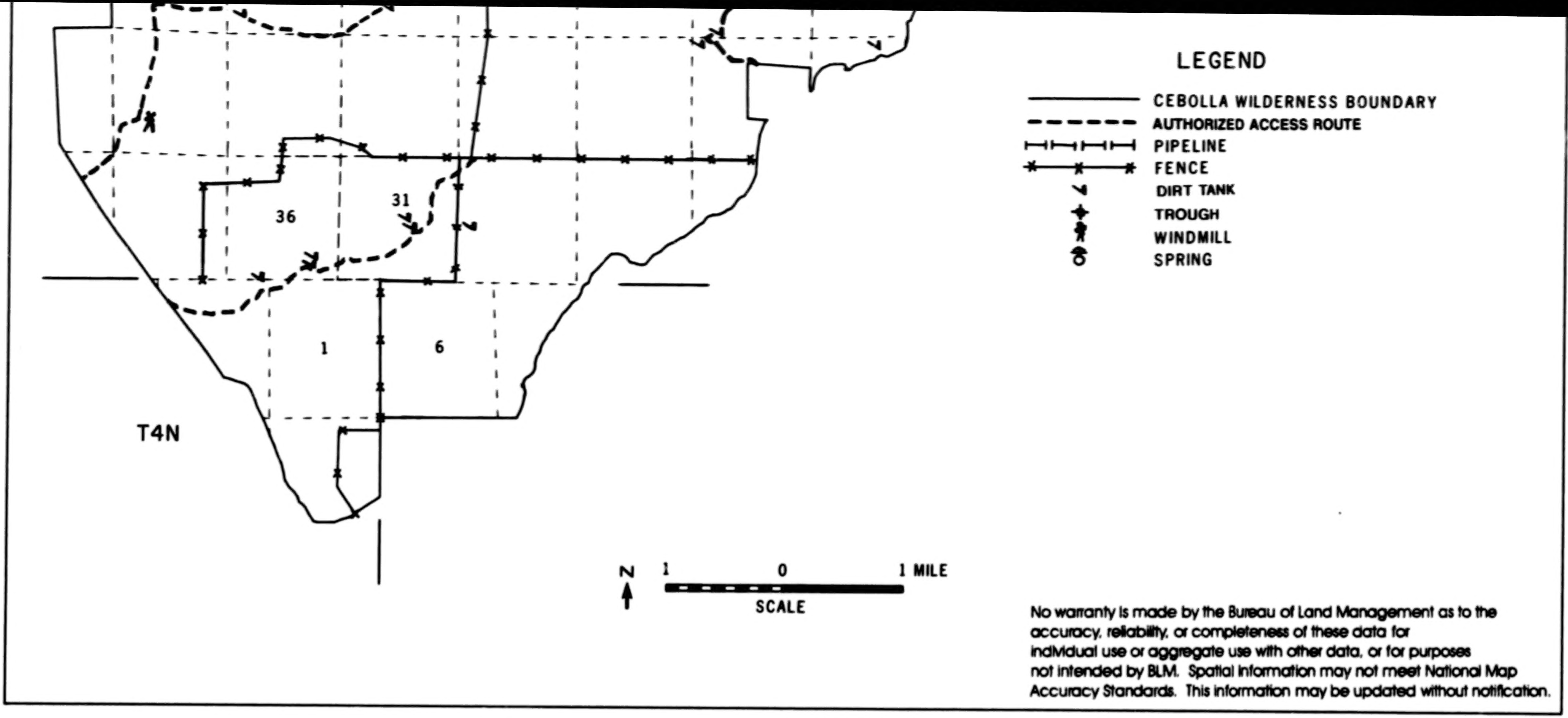
36
31
1
6
203
209
GRAZING ALLOTMENTS
LEGEND
CEBOLLA WILDERNESS BOUNDARY
AUTHORIZED ACCESS ROUTE
PIPELINE
FENCE
DIRT TANK
TROUGH
WINDMILL
SPRING



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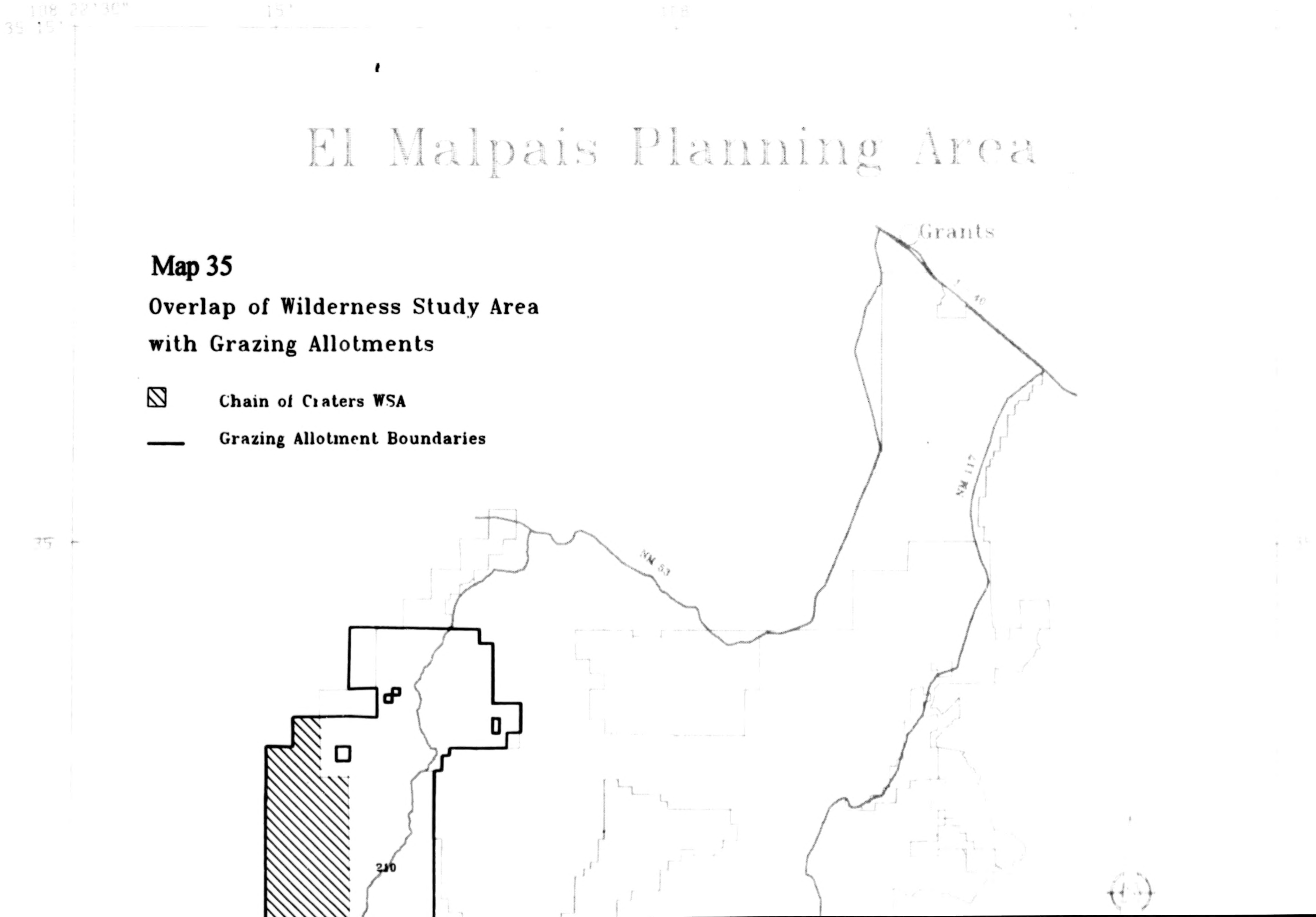
108°22'30"
35°15'
15'

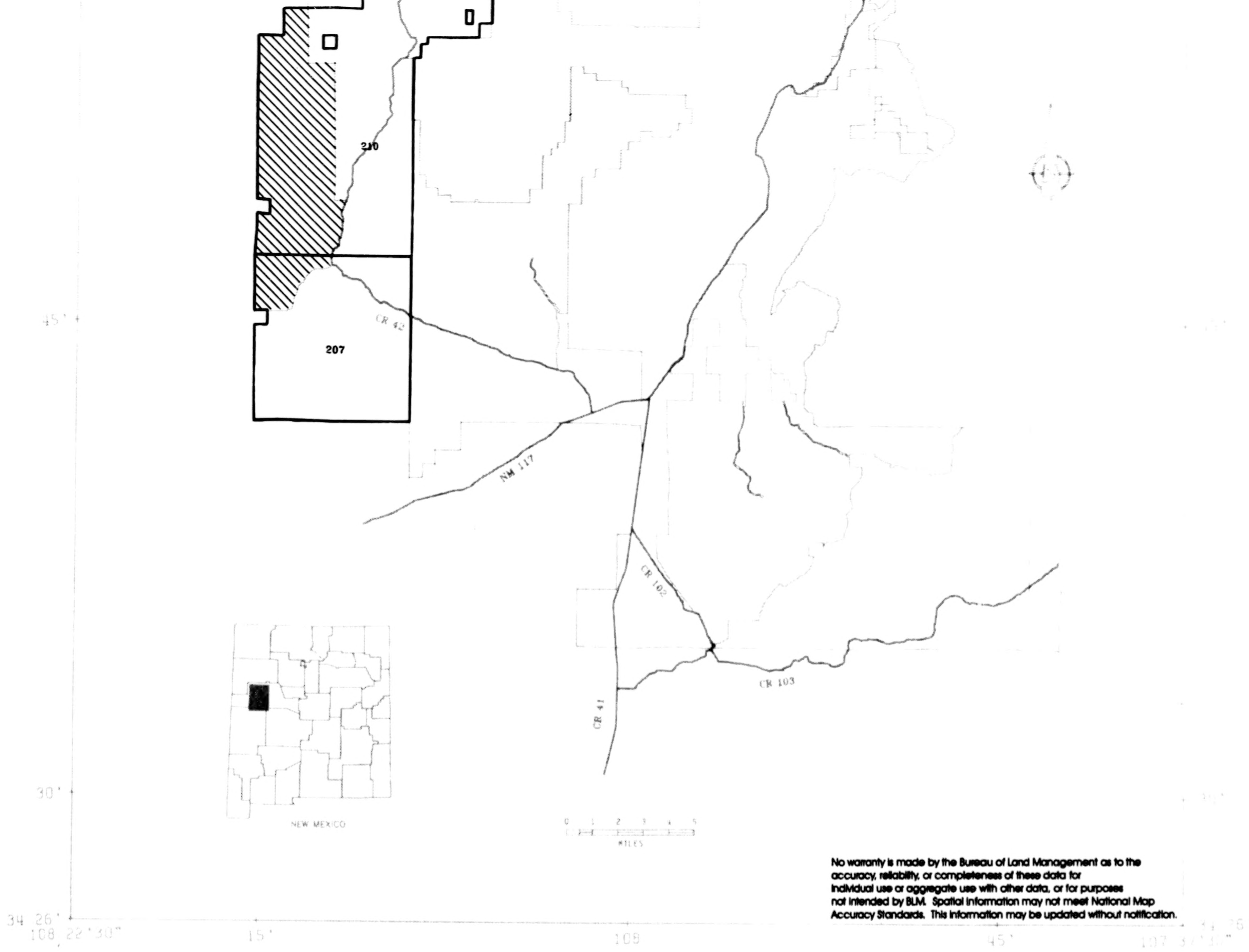


Map 35

Overlap of Wilderness Study Area with Grazing Allotments

▨ **Chain of Craters WSA**

— **Grazing Allotment Boundaries**



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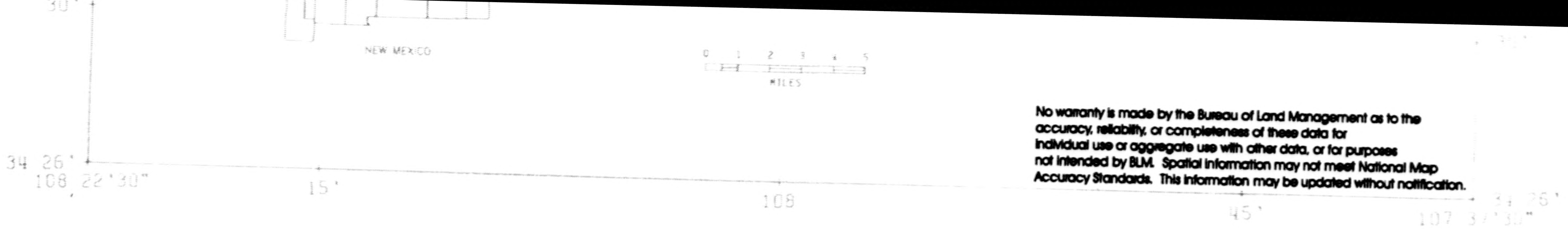

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TABLE 3-19

CIBOLA COUNTY PERSONAL INCOME BY MAJOR SOURCE AND

TABLE 3-19

CIBOLA COUNTY PERSONAL INCOME BY MAJOR SOURCE, AND EARNINGS BY INDUSTRY

(figures reflect thousands of dollars, unless otherwise noted)

Category	1985			1994		
	Number	% of Personal Income	% of Earnings by Industry	Number	% of Personal Income	% of Earnings by Industry
Total Personal Income [a]	174,376	100	na[b]	264,448	100	na
Non-Farm Income	172,475	98.91	na	262,639	99.31	na
Farm Income	1,901	1.09	na	1,809	.68	na
Population (thousands)	25.4	na	na	24.5	na	na
Per-Capita Personal Income (dollars)	6,856	na	na	10,793	na	na
Derivation of Total Personal Income Earnings by Place of Work	72,267	41.44	100	147,804	55.89	100
Less: Personal Contribution for Social Insurance	4,610	2.64	na	9,273	3.51	na
Plus: Adjustment for Residence	54,797	31.42	na	39,008	14.75	na
Equal: Net Earnings by Place of Residence	122,454	70.22	na	177,539	67.14	na
Plus: Dividends, Interest & Rent	15,375	8.82	na	16,556	6.26	na
Plus: Transfer Payments	36,547	20.96	na	70,353	26.6	na
Components of Earnings[c] Wages & Salaries	55,329	31.73	76.56	111,415	42.13	75.38
Other Labor Income	6,117	3.51	8.46	18,007	6.81	12.18
Proprietor's Income	10,821	6.21	14.97	18,382	6.95	12.44

Plus: Dividends, Interest & Rent	15,375	8.82	na	16,556	6.26	na
Plus: Transfer Payments	36,547	20.96	na	70,353	26.6	na
Components of Earnings[c] Wages & Salaries	55,329	31.73	76.56	111,415	42.13	75.38
Other Labor Income	6,117	3.51	8.46	18,007	6.81	12.18
Proprietor's Income	10,821	6.21	14.97	18,382	6.95	12.44
Farm	1,237	.71	1.71	410	.16	.28
Non-Farm	9,584	5.5	13.26	17,972	6.8	12.16
Earnings by Industry Farm	1,901	1.09	2.63	1,809	.68	1.22
Non-Farm	70,366	40.35	97.37	145,995	55.21	98.78
Private	48,462	27.79	67.06	98,740	37.34	66.8
Agricultural Services, Forestry, Fisheries, & Other	152	.09	.21	437	.17	.3
Mining	9,385	5.38	12.99	19,204	7.26	12.99
Construction	2,467	1.41	3.41	6,603	2.5	4.47
Manufacturing	3,706	2.13	5.13	9,896	3.74	6.7
Nondurable Goods	662	.38	.92	654	.25	.44
Durable Goods	3,044	1.75	4.21	9,242	3.49	6.25
Transportation & Public Utilities	7,288	4.18	10.08	10,048	3.8	6.8
Wholesale Trade	1,488	.85	2.06	4,661	1.76	3.15
Retail Trade	11,664	6.69	16.14	21,180	8.01	14.33
Finance, Insurance & Real Estate	1,713	.98	2.37	2,649	1	1.79
Services	10,599	6.08	14.67	24,062	9.1	16.28
Government & Government Enterprises	21,904	12.56	30.31	47,255	17.87	31.97
Federal--Civilian	3,632	2.08	5.03	15,064	5.7	10.19
Federal--Military	631	.36	.87	811	.31	.55
State & Local Government	17,641	10.12	24.41	31,380	11.87	21.23

Notes: [a] Income by place of residence.
[b] na - Not applicable.

Finance, Insurance & Real Estate	1,713	.98	2.37	2,649	1	1.79
Services	10,599	6.08	14.67	24,062	9.1	16.28
Government & Government Enterprises	21,904	12.56	30.31	47,255	17.87	31.97
Federal--Civilian	3,632	2.08	5.03	15,064	5.7	10.19
Federal--Military	631	.36	.87	811	.31	.55
State & Local Government	17,641	10.12	24.41	31,380	11.87	21.23

Notes: [a] Income by place of residence.
[b] na--Not applicable.
[c] Earnings by place of work.

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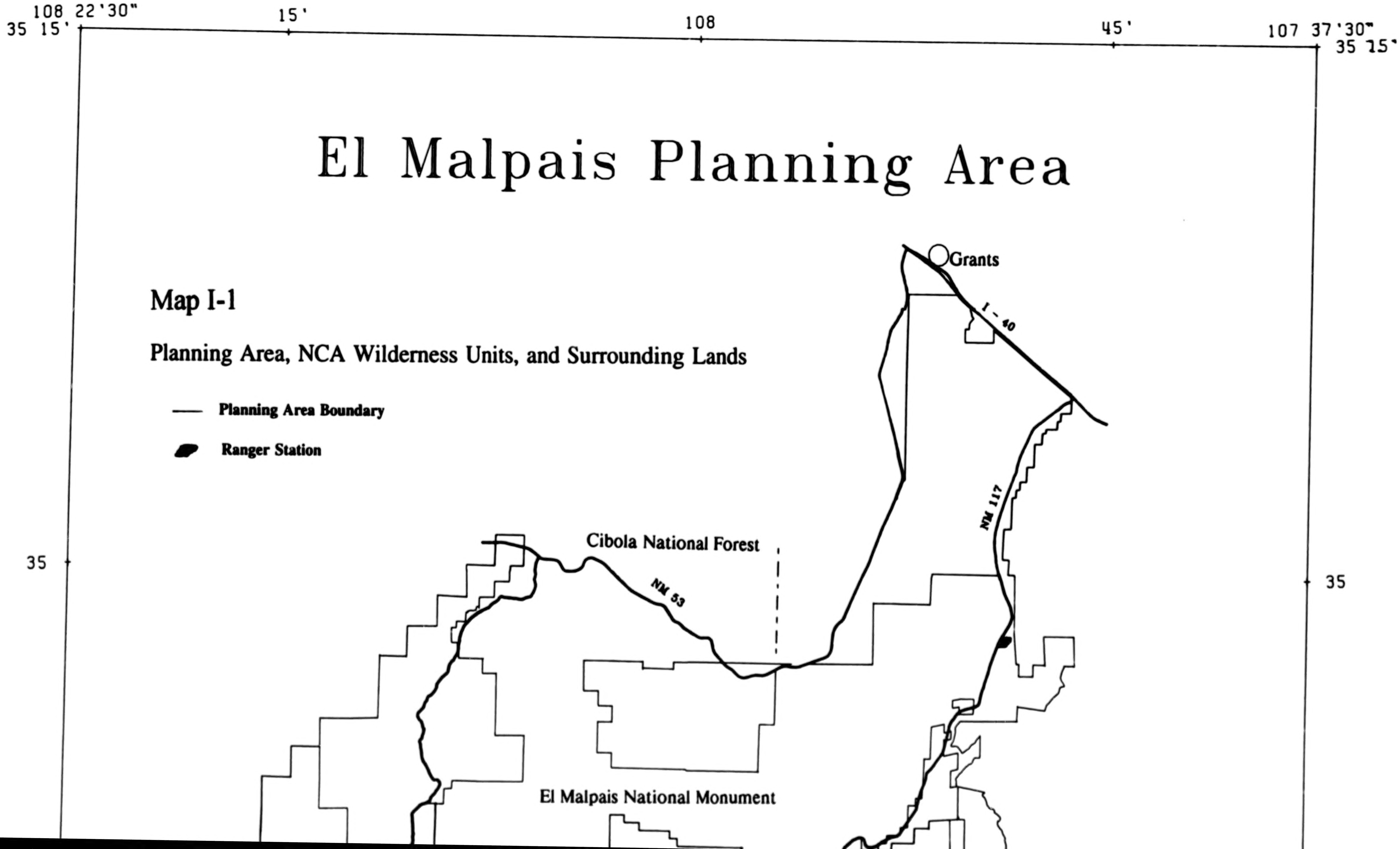
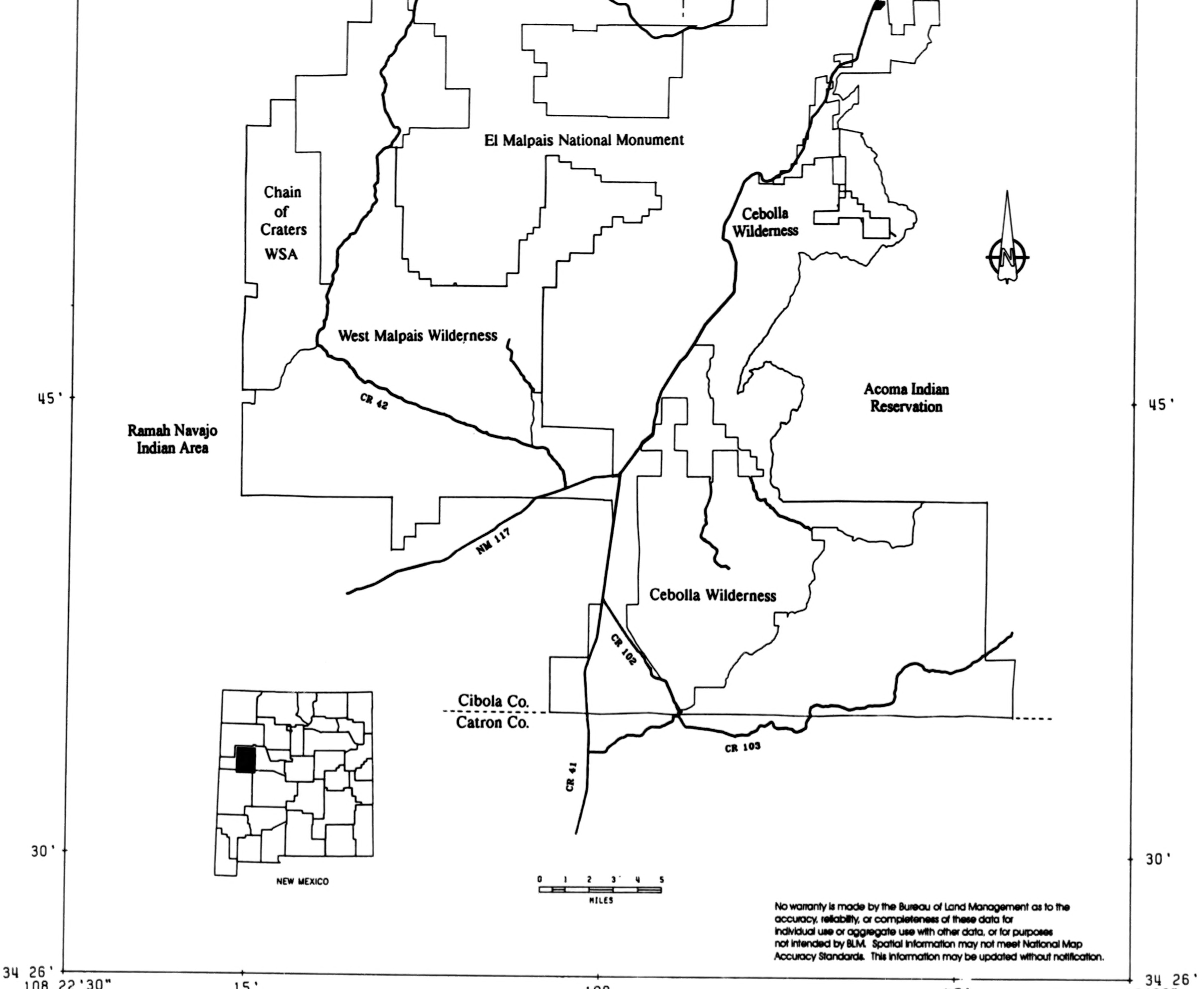


El Malpais Planning Area

Map I-1

Planning Area, NCA Wilderness Units, and Surrounding Lands



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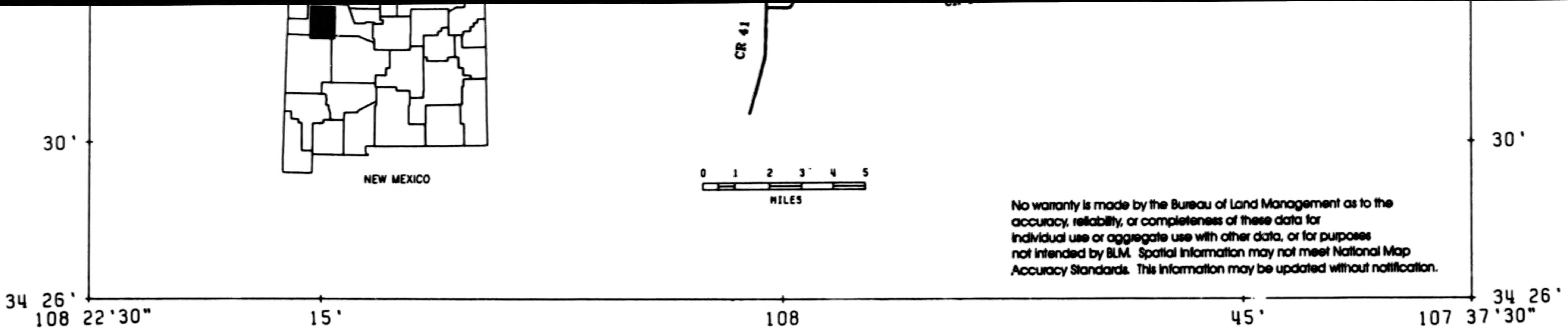

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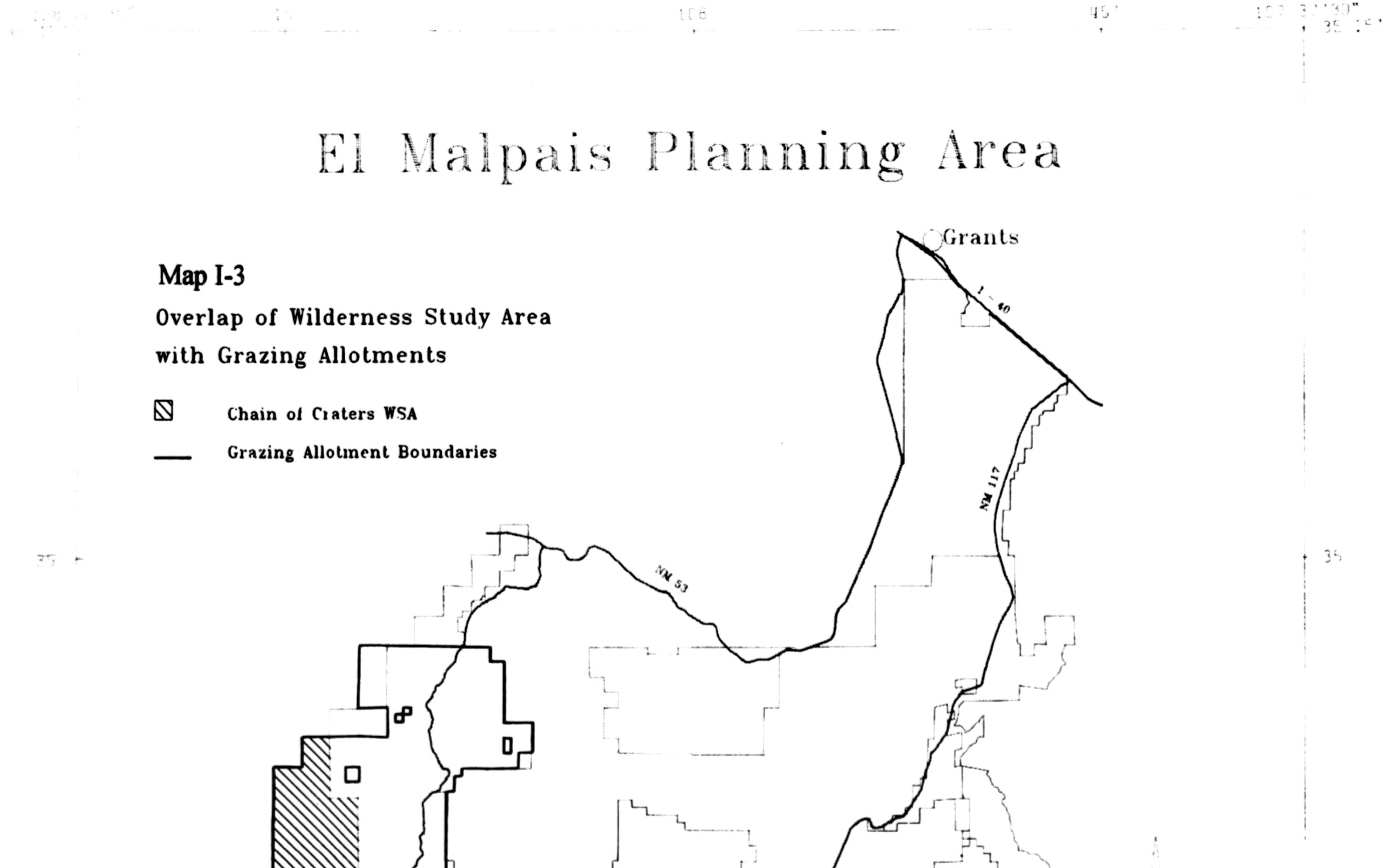


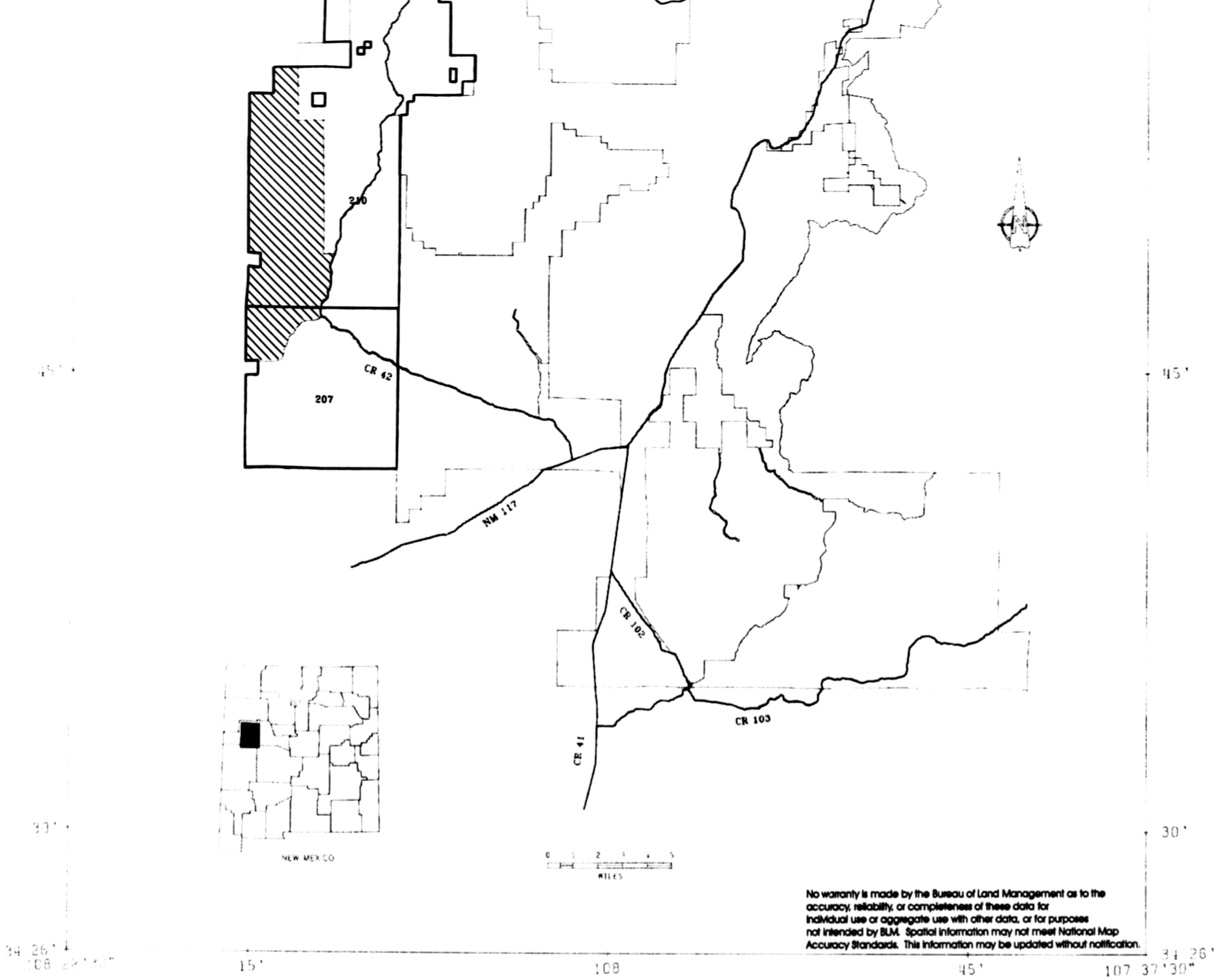
El Malpais Planning Area

Map I-3

Overlap of Wilderness Study Area with Grazing Allotments

▧ Chain of Craters WSA

— Grazing Allotment Boundaries



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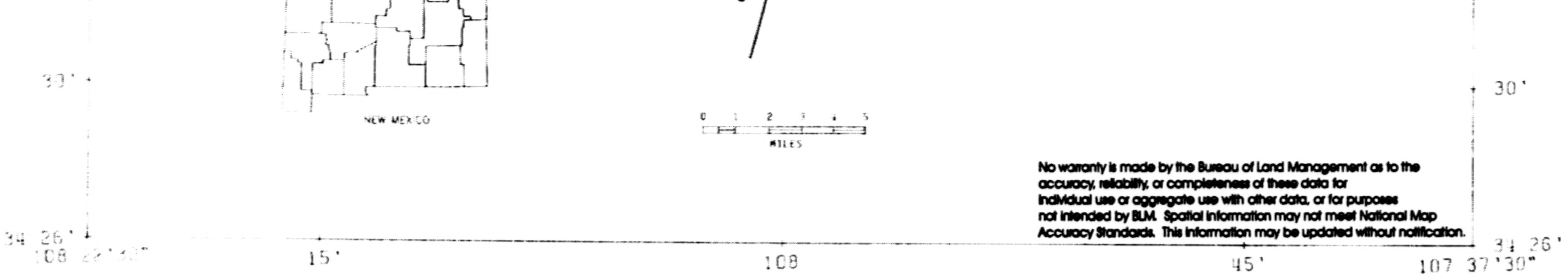

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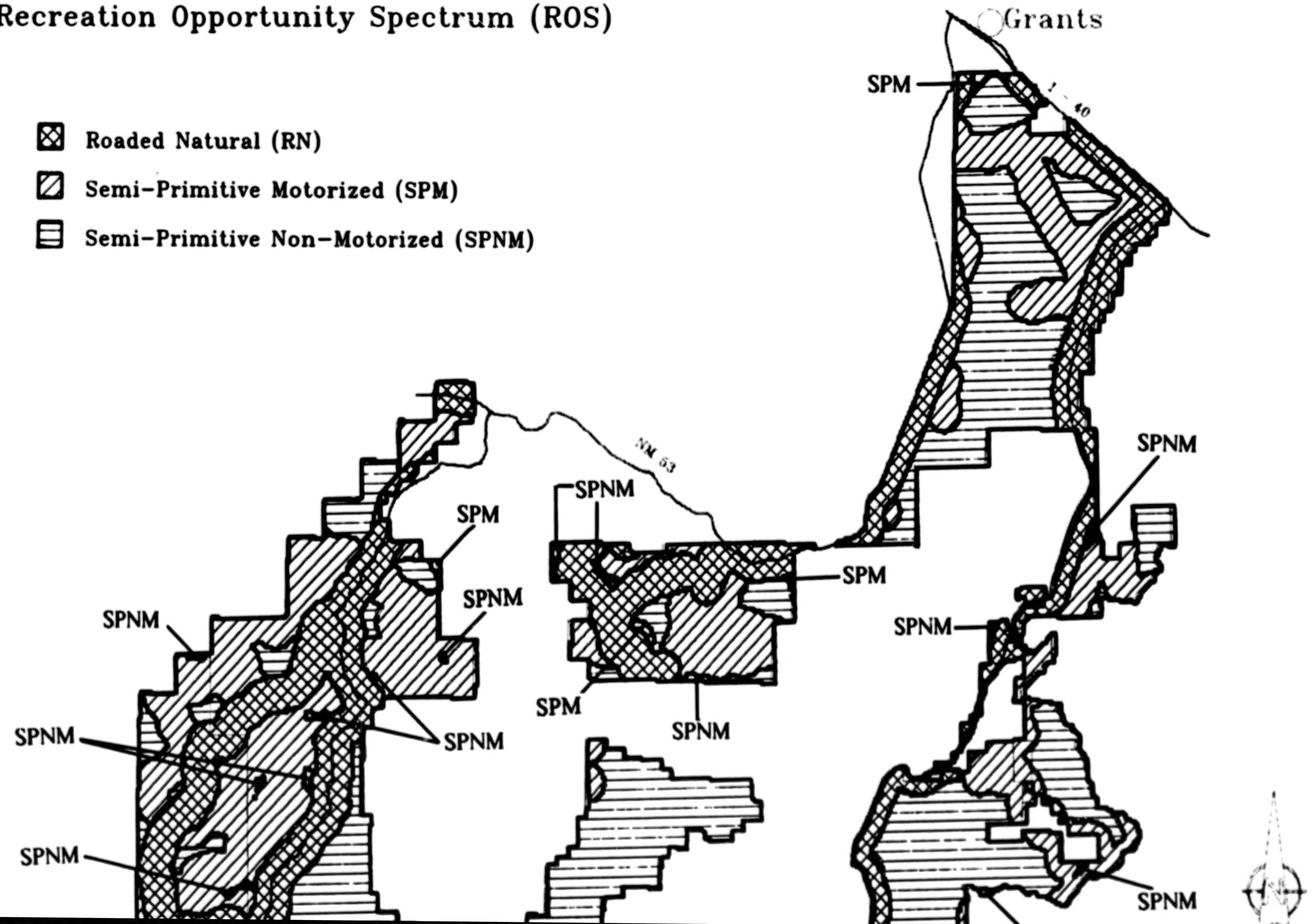
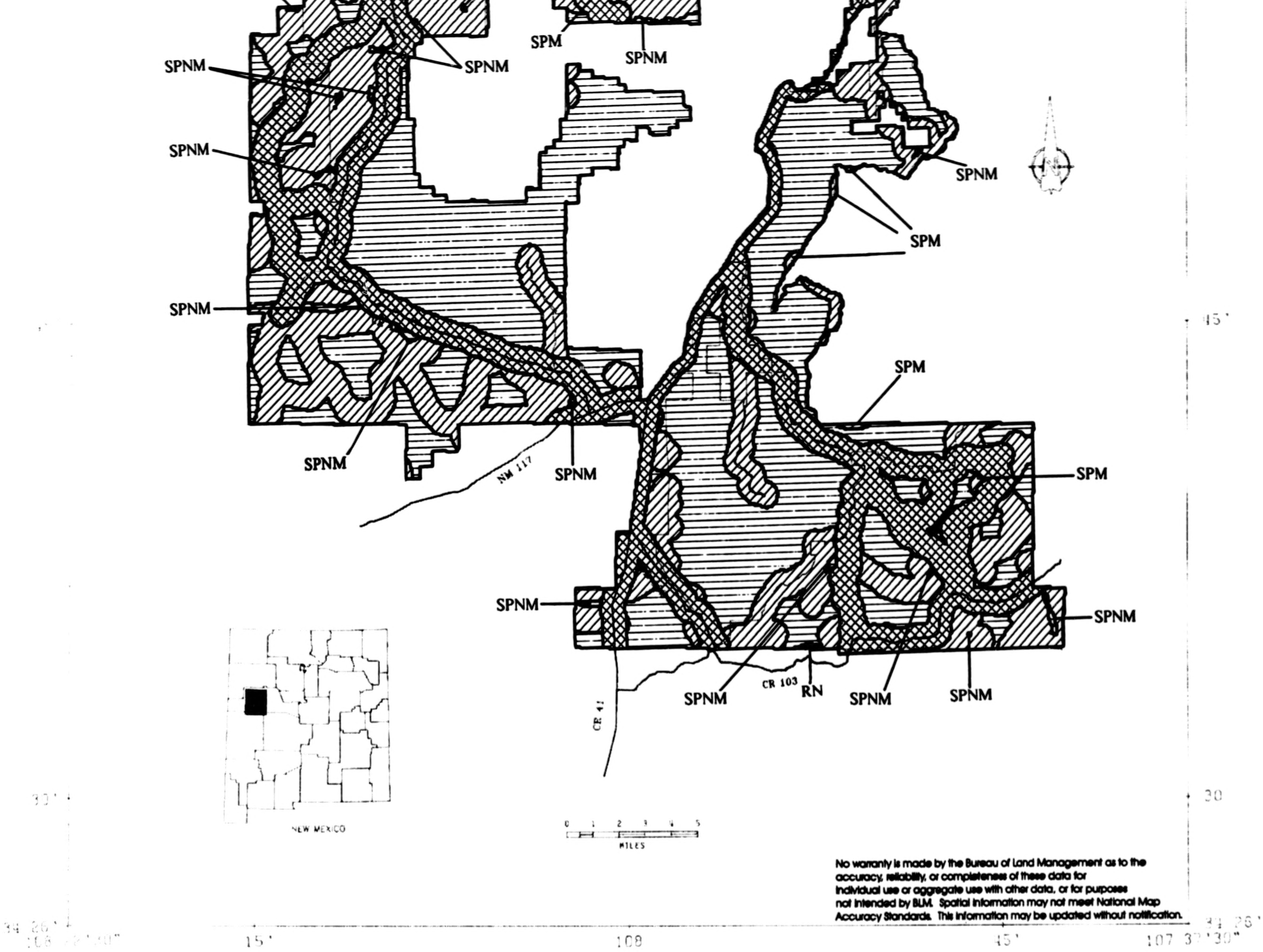
El Malpais Planning Area

Map I-5

Recreation Opportunity Spectrum (ROS)





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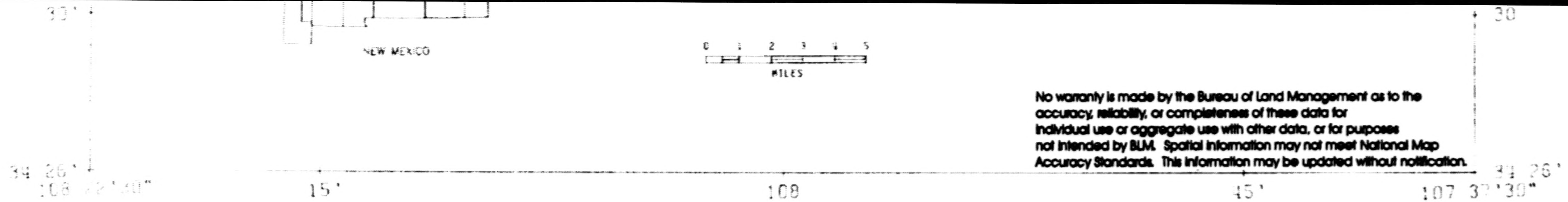

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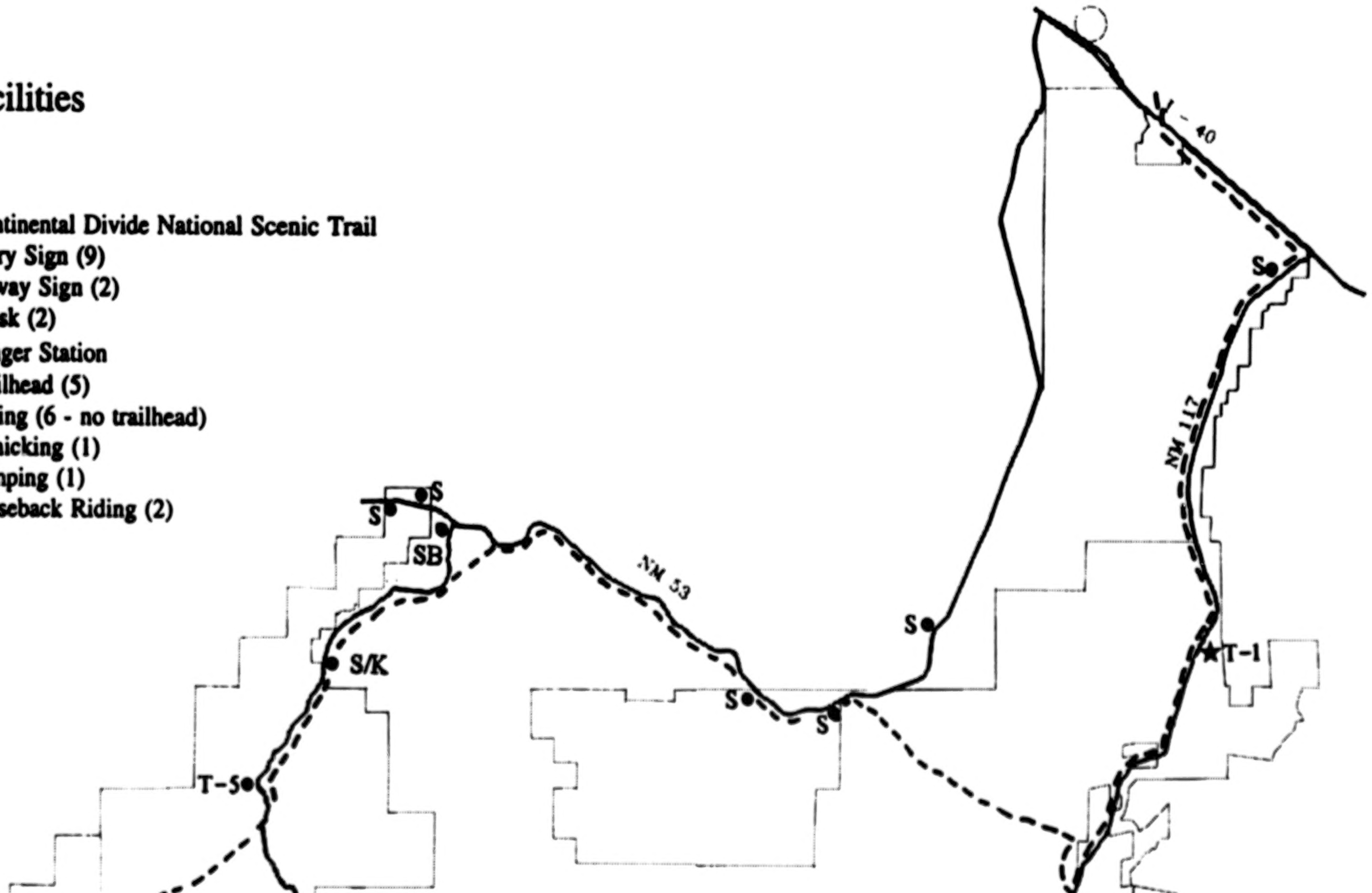
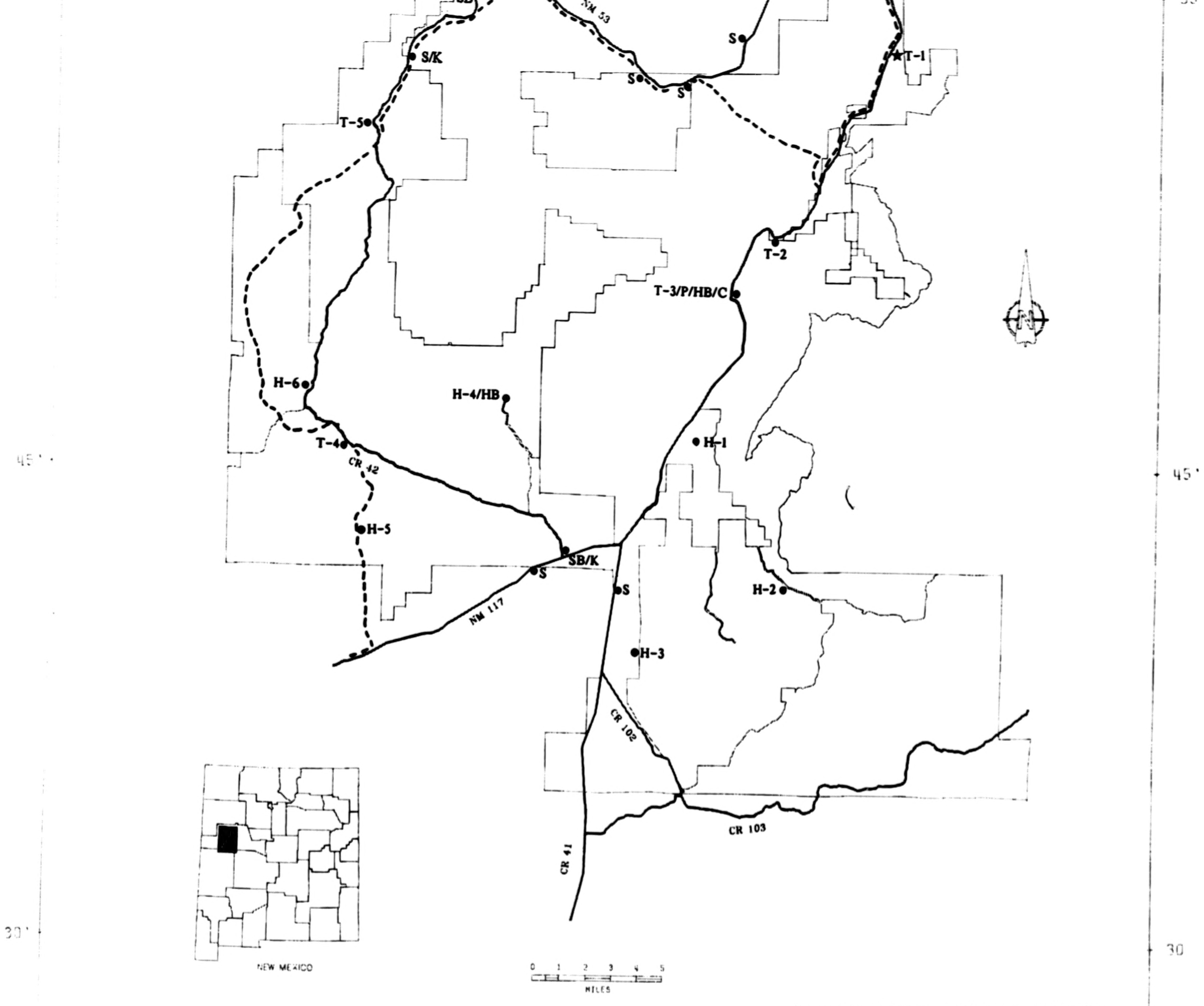
El Malpais Planning Area

Map I-6

Recreation Facilities

- - - -	Continental Divide National Scenic Trail
S	Entry Sign (9)
SB	Byway Sign (2)
K	Kiosk (2)
★	Ranger Station
T	Trailhead (5)
H	Hiking (6 - no trailhead)
P	Picnicking (1)
C	Camping (1)
HB	Horseback Riding (2)





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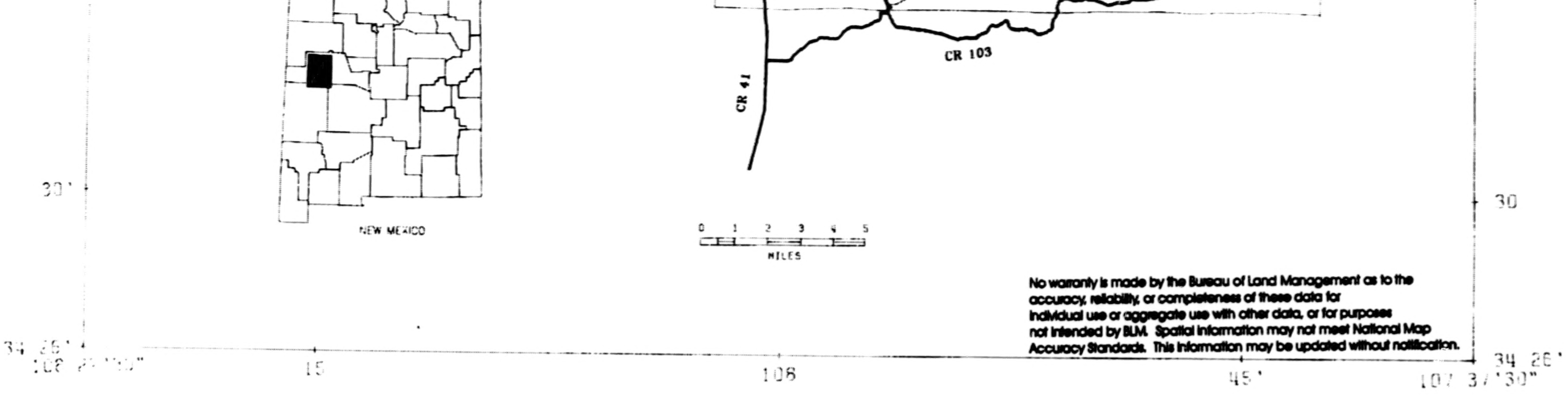

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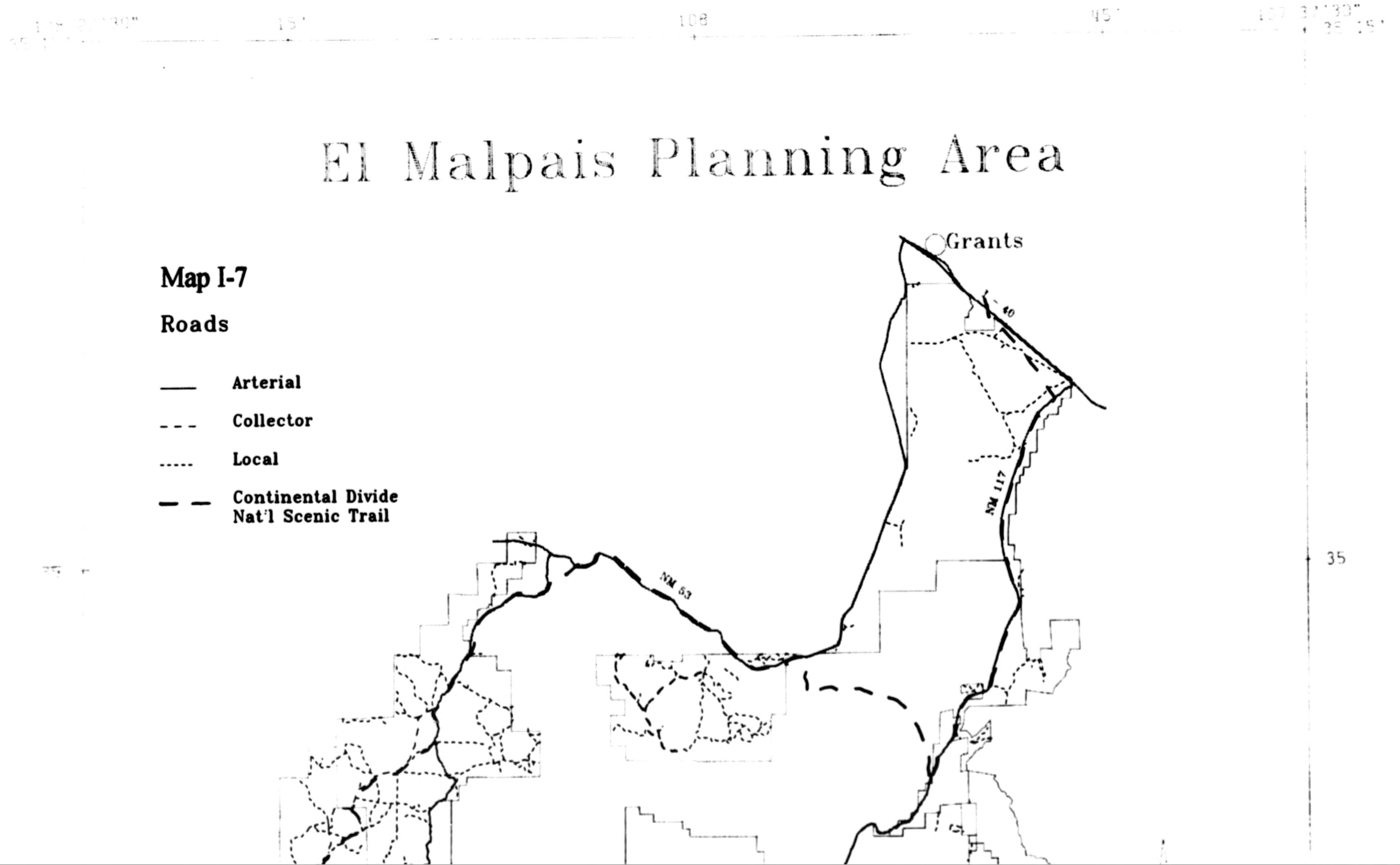
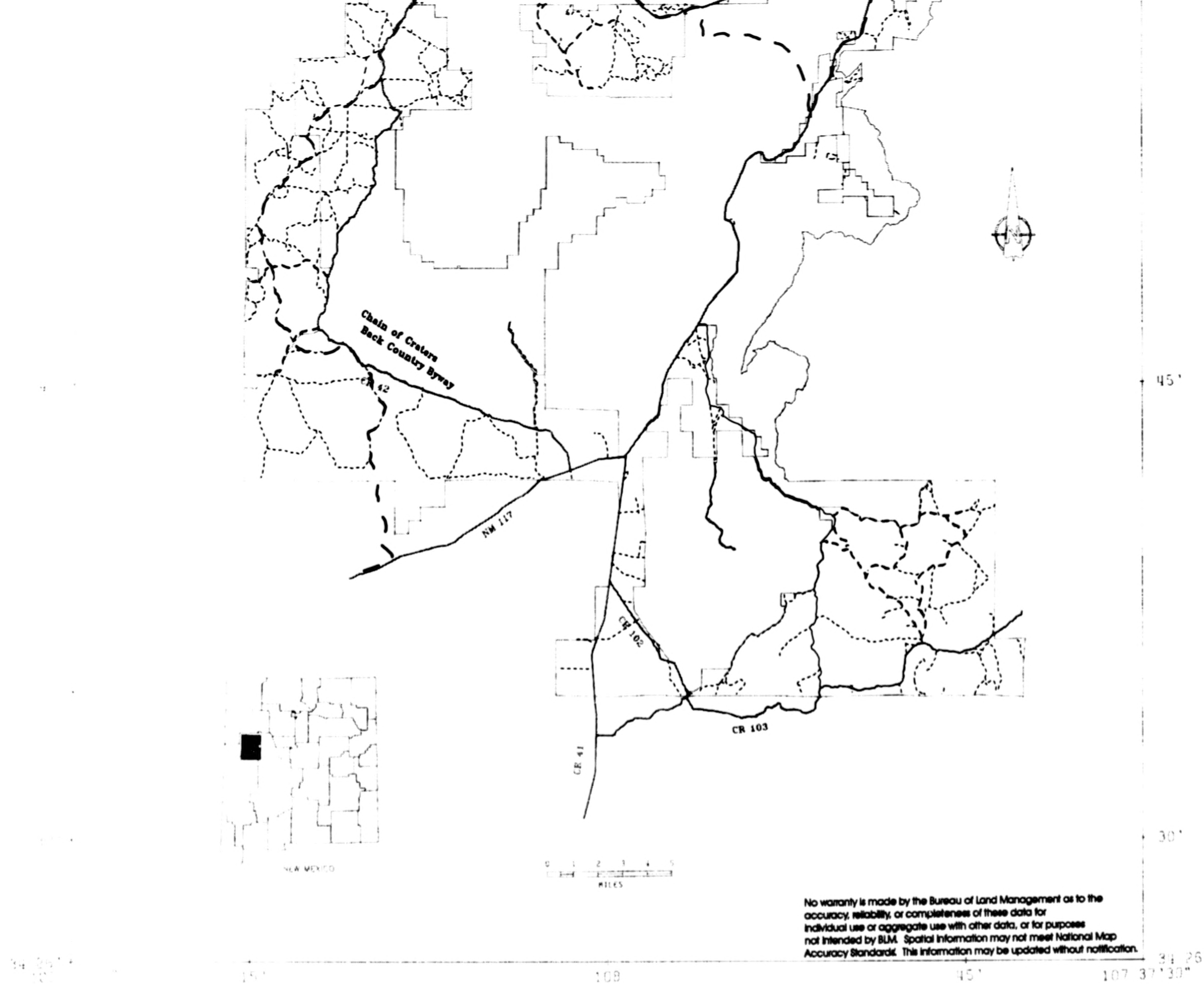
15'
108
45'
El Malpais Planning Area
Map I-7
Roads
Arterial
Collector
Local
Continental Divide
Nat'l Scenic Trail
Grants
40
NM 117
NM 53
35



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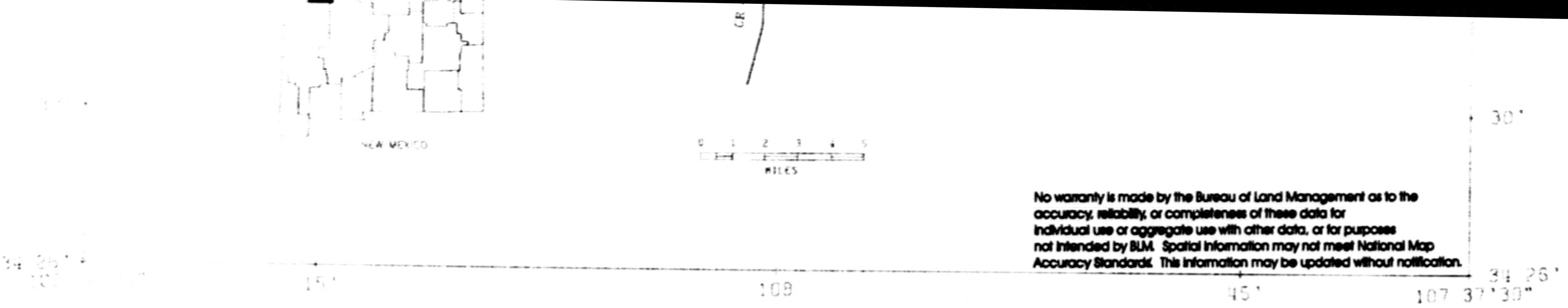

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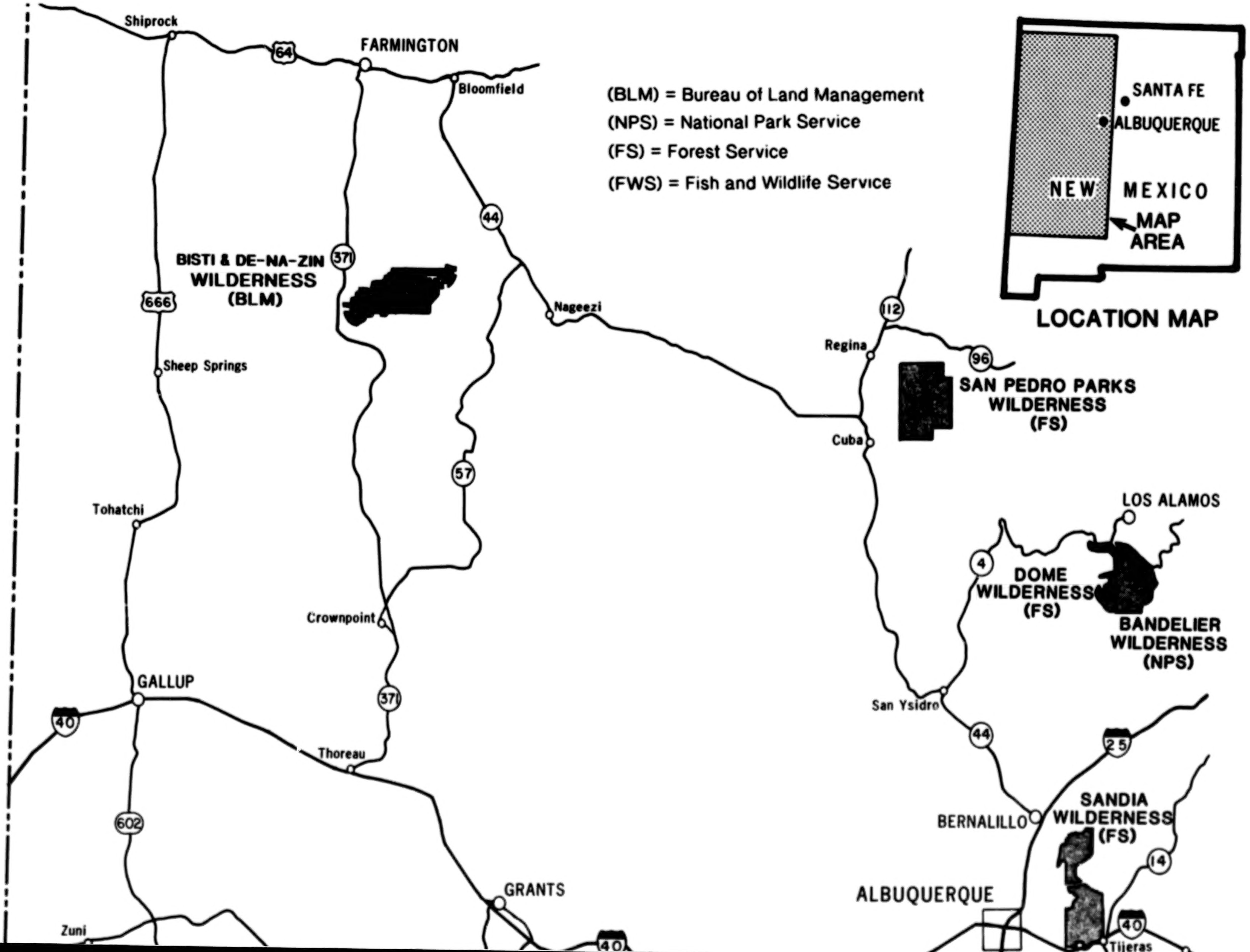
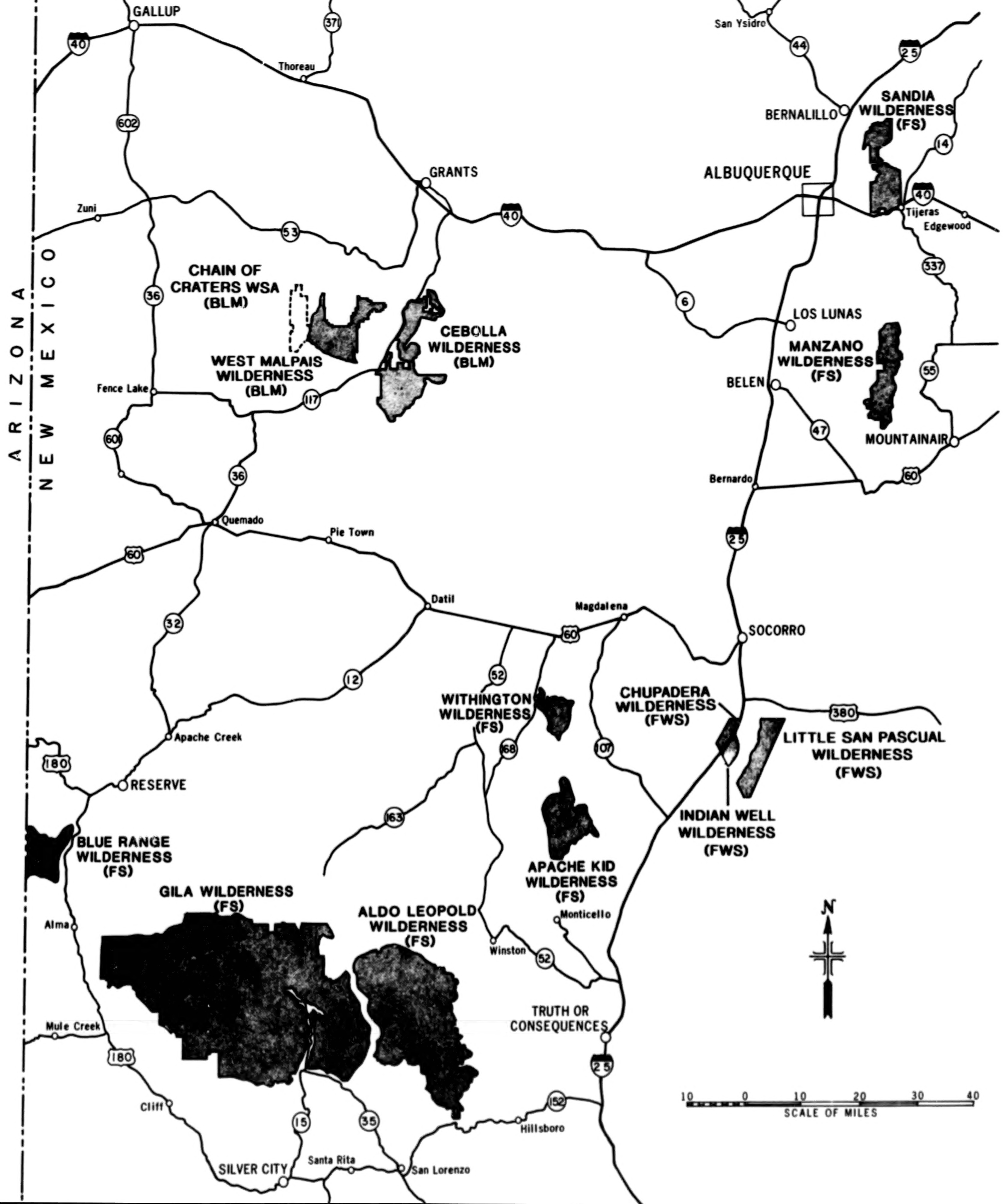
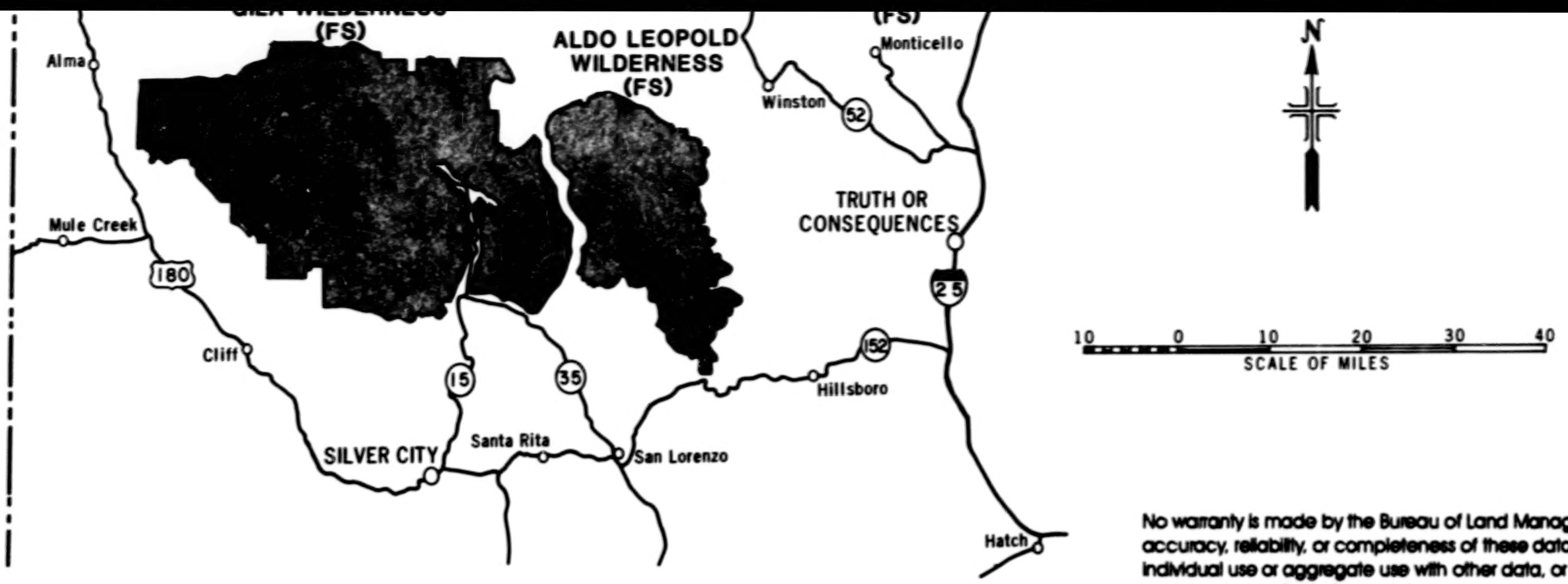
Map I-8
Wilderness in Western New Mexico




GALLUP
40
371
Thoreau
602
San Ysidro
44
25
BERNALILLO
SANDIA WILDERNESS (FS)
14
GRANTS
ALBUQUERQUE
40
Tijeras
Edgewood
Zuni
53
40
337
ARIZONA
NEW MEXICO
CHAIN OF CRATERS WSA (BLM)
36
6
LOS LUNAS
CEBOLLA WILDERNESS (BLM)
MANZANO WILDERNESS (FS)
WEST MALPAIS WILDERNESS (BLM)
BELEN
55
Fence Lake
117
601
47
MOUNTAINAIR
36
Bernardo
60
Quemado
Pie Town
60
25
Datil
Magdalena
32
60
SOCORRO
12
52
WITHINGTON WILDERNESS (FS)
CHUPADERA WILDERNESS (FWS)
380
LITTLE SAN PASCUAL WILDERNESS (FWS)
Apache Creek
68
107
180
RESERVE
163
INDIAN WELL WILDERNESS (FWS)
BLUE RANGE WILDERNESS (FS)
APACHE KID WILDERNESS (FS)
GILA WILDERNESS (FS)
ALDO LEOPOLD WILDERNESS (FS)
N
Monticello
Alma
Winston
52
TRUTH OR CONSEQUENCES
Mule Creek
180
25
10
0
10
20
30
40
SCALE OF MILES
152
Cliff
15
35
Hillsboro
SILVER CITY
Santa Rita
San Lorenzo



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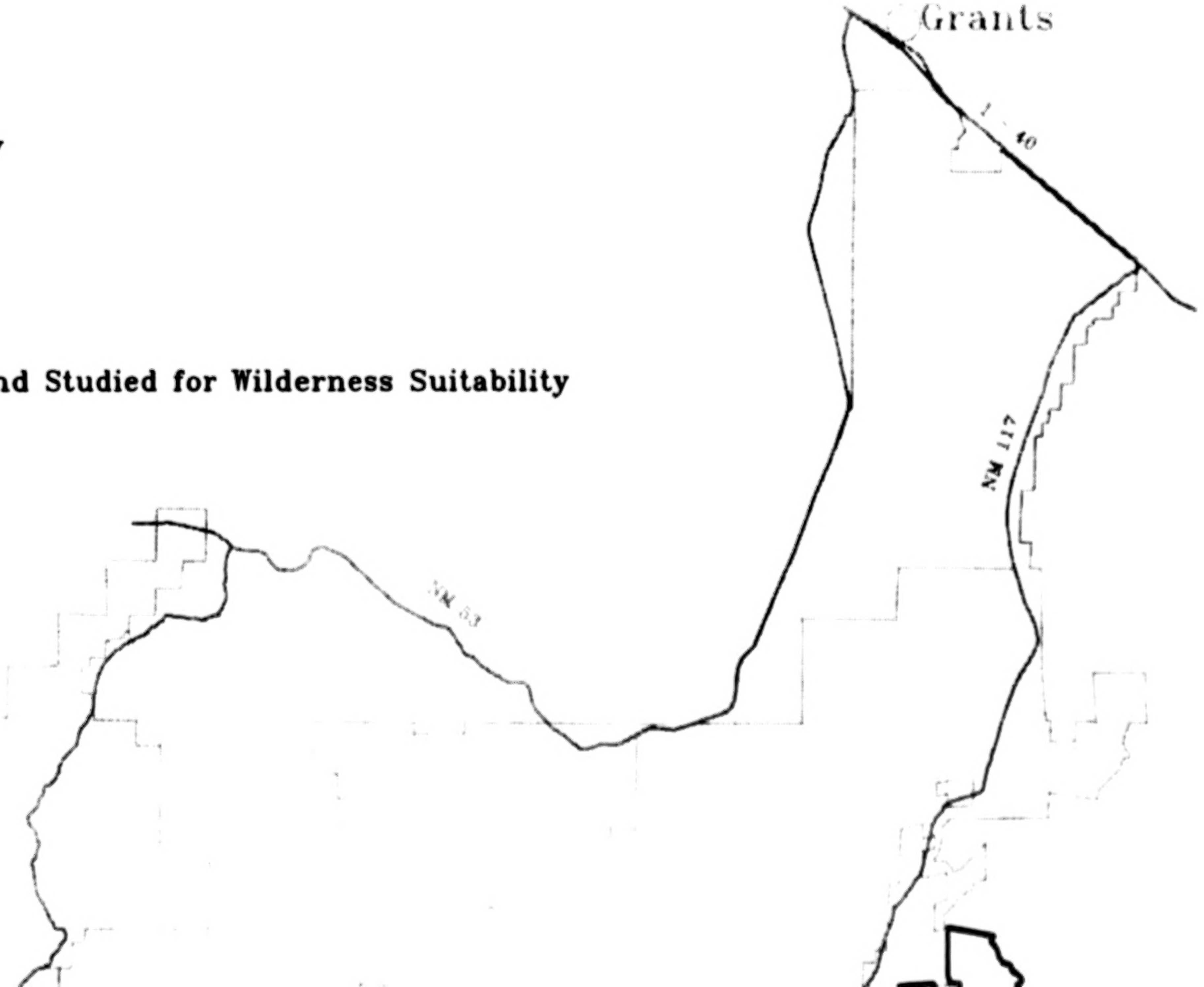
El Malpais Planning Area

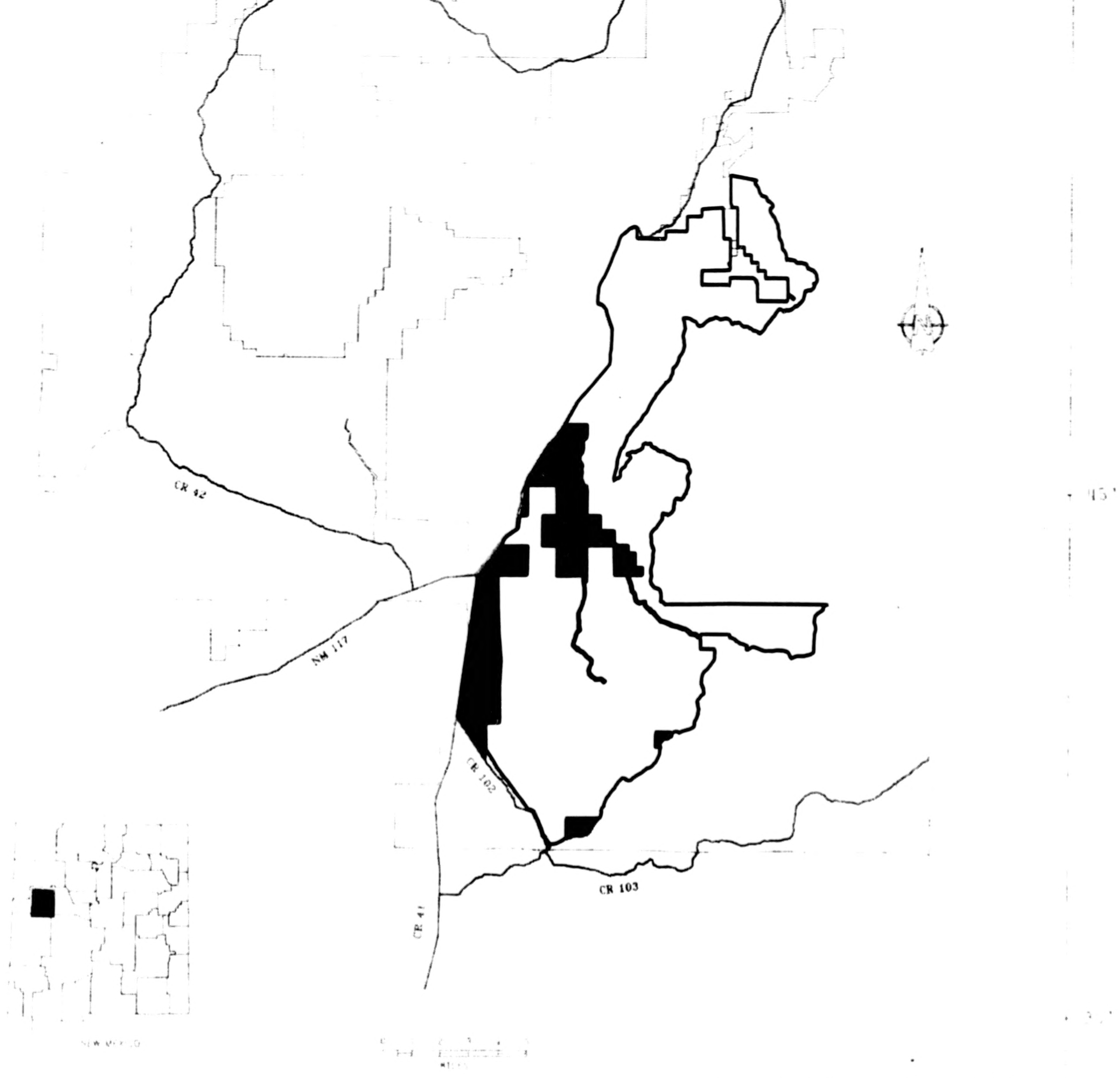
Map J

Wilderness Suitability

— Cebolla Wilderness

■ Lands Inventoried and Studied for Wilderness Suitability





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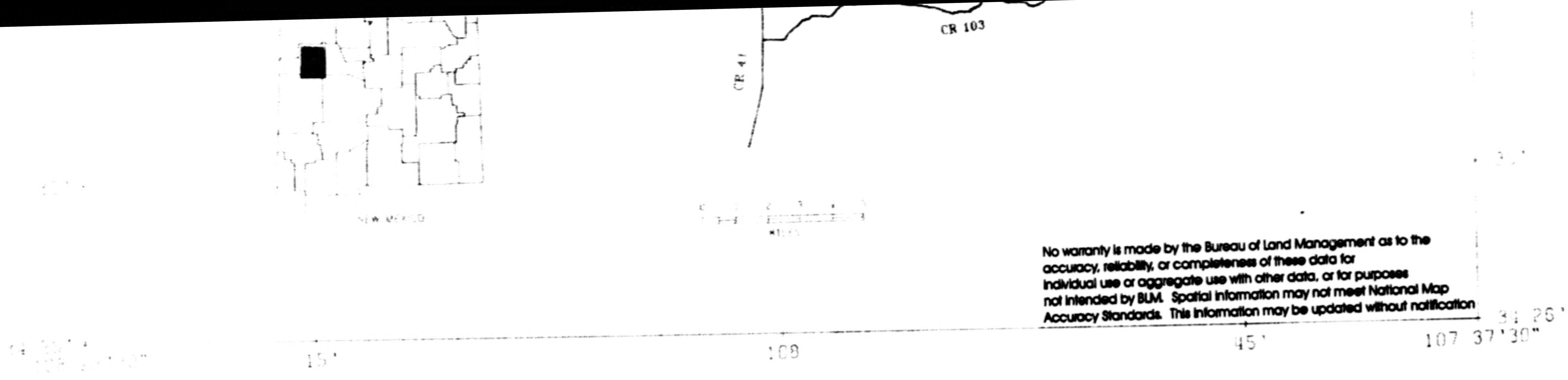

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TABLE R-4

CATRON COUNTY PERSONAL INCOME BY MAJOR SOURCE, AND EARNINGS BY INDUSTRY

(figures reflect thousands of dollars, unless otherwise noted)

Category	**1985**			**1996**		
	Number	**% of Personal Income**	**% of Earnings by Industry**	**Number**	**% of Personal Income**	**% of Earnings by Industry**
Total Personal Income [a]	22,806	100	na [b]	39,076	100	na
Non-Farm Income	20,061	87.96	na	38,264	97.92	na
Farm Income	2,745	12.04	na	812	2.09	na
Population (thousands)	2.6	na	na	2,665	na	na
Per-Capita Personal Income (dollars)	8,867	na	na	14,663	na	na
Derivation of Total Personal Income Earnings by Place of Work	12,580	55.16	100	20,214	51.72	100
Less: Personal Contribution for Social Insurance	637	2.79	na	1,429	3.66	na
Plus: Adjustment for Residence	193	.85	na	-619	-1.58	na
Equal: Net Earnings by Place of Residence	12,136	53.21	na	18,166	46.49	na
Plus: Dividends, Interest & Rent	5,612	24.61	na	9,704	24.83	na
Plus: Transfer Payments	5,058	22.18	na	11,206	28.68	na
Components of Earnings [c] Wages & Salaries	8,273	36.28	65.76	13,356	34.18	66.07
Other Labor Income	689	3.02	5.48	1,684	4.31	8.33
Proprietor's Income	3,618	15.86	28.76	5,174	13.24	25.60
Farm	1,866	8.18	14.83	-93	-.24	-.46
Non-Farm	1,752	7.68	13.93	5,267	13.48	26.06

Components of Earnings Wages & Salaries	8,273	36.28	65.76	13,356	34.18	66.07
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Non-Farm	1,752	7.68	13.93	5,267	13.48	26.06
Earnings by Industry Farm	2,745	12.04	21.82	812	2.08	4.02
Non-Farm	9,835	43.12	78.18	19,402	49.65	95.98
Private	4,604	20.19	36.60	10,221	26.16	50.56
Agricultural Services, Forestry, Fisheries, & Others	389	1.71	3.09	247	.63	1.22
Mining	(D) [d]	---	---	247	.63	1.22
Construction	598	2.62	4.75	1,862	4.76	9.21
Manufacturing	1,204	5.28	9.57	1,637	4.19	8.10
Nondurable Goods	(D)	---	---	647	1.66	3.20
Durable Goods	(D)	---	---	---	---	---
Transportation & Public Utilities	260	1.14	2.07	1,555	3.98	7.69
Wholesale Trade	79	.35	.63	(L) [e]	---	---
Retail Trade	926	4.06	7.36	1,690	4.32	8.36
Finance, Insurance & Real Estate	(D)	---	---	752	1.92	3.72
Services	1,133	4.97	9.01	2,216	5.67	10.96
Government & Government Enterprises	5,231	22.94	41.58	9,181	23.50	45.42
Federal--Civilian	2,365	10.37	18.80	4,273	10.94	21.14
Federal--Military	63	.23	.50	82	.21	.41
State & Local Government	2,803	12.29	22.28	4,826	12.35	23.87

Notes: [a] Income by place of residence.
[b] na--Not applicable.
[c] Earnings by place of work.
[d] (D)--Not shown to avoid disclosure of confidential information. Estimates are included in totals.
[e] (L)--Less than $50,000. Estimates are included in totals.

Government & Government Enterprises	5,231	22.94	41.58	9,181	[illegible]	[illegible]
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[e] (L)--Less than $50,000. Estimates are included in totals.

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